# THE IRON TRADE REVIEW

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## IMPROVEMENT

### IN FINISHED LINES WELL SUSTAINED.

### Pig Iron Dull and Prices Weak—Steel Corporation Blows In Additional Furnaces.

The improvement in finished lines, notably bars, merchant shapes and wire products, continues to be well sustained. The implement makers are specifying freely, and the tonnage that is being received from the railroads, particularly in the west where preparations are being made to move the crops, is larger than it has been at any time this year. There is clearly evident throughout the iron and steel industry an optimism which is now really being felt. The disposition is growing on the part of large corporate interests to contribute to the return of prosperity by the actual placing of business, while the wealth of the rural communities is reflected in the increased demand for wire products.

**Pig Iron Dull**

The competition of Ohio irons has resulted in lower prices on local grades in the Chicago district, while eastern Pennsylvania operators are asking higher prices for fourth quarter delivery, despite the limited demand. Slight concessions are also reported on steel making grades for spot shipment in the valleys. The market in all centers is stagnant, the demand for foundry grades being limited to immediate requirements. Pittsburg reports the sale of 8,000 tons of basic, and 1,500 tons of No. 2 foundry have been taken by a Cleveland cast iron pipe interest. The United States Steel Corporation has blown in six stacks during the week at scattered points, and is now operating its blast furnaces at about 55 per cent of normal capacity. The Carnegie Steel Co. has now more furnaces in operation than at any time since December, having 25 on the active list. The effect of the coal strike is now being felt in the Birmingham district, where the blowing in of two stacks has been deferred on account of the fuel shortage.

**Finished Material**

Ruling quotations on plates and structural shapes have been made to apply on deliveries to Jan. 1, and this extension from Oct. 1 as originally announced, has resulted in the placing of much larger tonnages by jobbers and fabricators than would have been the case if the concession of $2 had only covered a three month period. In both the Cleveland and Chicago districts large contracts have been placed, and the fact that the buying was on a conservative basis indicates that the movement was by no means speculative. The competition of the re-rolling mills has unsettled the market in high carbon bars and merchant shapes, and concessions of $1 to $2 a ton from agreed quotations are being made. Bar iron prices have been re-affirmed on the basis of 1.35c Pittsburg.

**Bar Iron Wage Settlement**

By the terms of the bar iron wage settlement, the puddlers and finishers agree to accept reductions varying from 7 to 10 per cent. These terms have, however, not been approved by the Republic Iron & Steel Co., whose iron mills continue idle. A second conference will be held with the Amalgamated Association this week.

### IRON WAGE SCALE CONFERENCE.

(Special Telegram.)

Pittsburg, July 15.—The Republic Iron and Steel Co. will hold another conference with the Amalgamated Association of Iron, Steel & Tin Workers, on Friday, July 17, to adjust the bar iron scale. A local steel interest has purchased 3,000 tons of Bessemer iron, special grade, for early delivery, and a sale of 1,500 tons of No. 2 foundry, on the basis of $12, Birmingham, has been reported.

## PENALTY CLAUSES

### INCORPORATED IN THIS SEASON'S ORE CONTRACTS.

### Big Concession to Furnaces on Ore Below the Guarantee—Slight Bonus to Shippers.

Bessemer and non-Bessemer ore contracts, incorporating the new penalty clauses referred to last week, are now being mailed to ore consumers by several of the leading shippers of Lake Superior ores. The concessions allowed the furnaces for a decline in iron content below the guarantee are much larger than the bonus to be paid the shippers if the base is exceeded, and it is evident that the demands of the pig iron producers have been satisfactorily met.

**Bessemer Ore Penalty Clause.**

The penalty clause in the Bessemer ore contract follows:

The price of this ore is named and accepted on the expectation that the ore will average ..... per cent in metallic iron in its natural condition, and ..... one-thousandths of 1 per cent in phosphorus dried at 212 degrees, Fahr. Taking this as the standard of quality, it is agreed that any total average variation therefrom in metallic iron shall be entitled to recognition and adjustment by increase or abatement in price, as the case may be, at the rates per unit, per ton, hereinafter specified. When this ore contains 50 per cent to 55 per cent (both inclusive) of metallic iron, the value per unit or fraction thereof is at the rate of ..... known as the base unit value; when less than 50 per cent, but not less than 49 per cent, for such unit or fraction thereof of decrease only, said base unit value shall be increased at the rate of one-half thereof; when less than 49 per cent, but not less than 48 per cent, for such unit or fraction thereof of decrease only, said base unit value shall be increased at the rate of 100 per cent thereof; when less than 48 per cent, the value shall be at the rate of ..... cents per unit or fraction thereof; when more than 55 per cent, but not more than 56 per cent, for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of one

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# THE WEEK IN IRON CENTERS

## PITTSBURG.

### Iron and Steel Trade Shows Continued Improvement.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., July 14.

A brightening influence is slowly but surely working its way through the iron and steel industry. Despite the fact that the present season is normally the most inactive of the year, from the standpoint of business affairs, it is becoming more clearly apparent that a wholesome reaction has set in and that no ground is now being lost.

It is not to be concluded from the encouraging signs that former prosperity is close at hand or that the grossly exaggerated reports of iron and steel mills and other industries have much basis in truth. Nor should the bare facts be overlooked, that the railroads, the largest single consumers of iron and steel, are still avoiding the market; that the buying trade in general has not sufficiently recovered from its recent embarrassments to confidently buy for the future; or that all the fundamental reasons have been so adjusted as to warrant a full business resumption.

It may be made a source of gratification, however, that the iron and steel industry is more than holding its own and that with certain favored interests, substantial gains are real. The development has probably not spread in equal proportion to all companies, which is obvious from the varying nature of their products, but it would appear that their prospects have materially improved.

With the blowing in this week of additional furnaces at New Castle and Duquesne, the Carnegie Steel Co. now has 25 blast furnaces in operation. This is by two furnaces the largest active pig iron capacity the Carnegie company has required for its mills at any time since last December, when the effects of the depression fell heaviest upon the iron and steel companies. The mills of the company, particularly in plates and structural shapes, are working under unusually full schedules, and other large producers in the Pittsburg district report better conditions as to their operations.

Satisfaction in iron and steel circles is to be derived from the successful termination in the week of the second wage conference between the Western Bar Iron Association and the Amalgamated Association of Iron, Steel and Tin Workers. Boiling and finishing scales for the year up to July, 1909, were adopted, the workmen agreeing to accept reductions of approximately 8 to 10 per cent because of the prevailing business conditions. Although no further conferences have yet been arranged between the Republic Iron & Steel Co. and the Amalgamated Association, it is expected that this will be done without delay and that the amicable outcome of the Detroit meeting will pave the way to an adjustment of this latter controversy.

**Pig Iron.**—More business in pig iron is being closed in this district than for several weeks past, but the market is still far from being active. Makers seem of one idea on prices for any extended delivery, but the spot market is showing considerable irregularity.

The leading sale of the week included 8,000 tons of basic, taken by a furnace interest not in the valleys, the price reported being a shade higher than $15 valley basic, or about $15 furnace. The iron is for prompt delivery and the trade generally has connected this fact with the operations about to be started by the Pittsburg Steel Co. in its new steel plant at Monessen, Pa. This has not been confirmed, however. The Pittsburg Steel Co. for several weeks past has been putting in the bottoms in several of its new open-hearth furnaces and is expected to have them in readiness for firing about Aug. 1. It has a supply of scrap now in its yards and is expected to take on soon if it has not already done so, a part at least, of the basic pig involved in its inquiry for 150,000 tons a year which has been before sellers for several months. An Ohio steel interest is in the market for from 2,000 to 2,500 tons of basic for delivery over the remainder of the year.

A local foundry interest took a lot of standard Bessemer this week, and quotations of $16 valley failed to attract the order. It is known the $16 valley on Bessemer can be shaded, under ordinary circumstances, $15.75 valley having been recently done as reported. A little malleable is going at $15 valley.

In foundry iron the market for No. 2 is generally regarded as from $15 to $15.25 for any delivery this year. The spot market, however, lacks firmness, and we note small sales at $14.65, while even lower prices are reported. A purchase of 100 tons of No. 2 for July is also announced at a shade higher than $14.75 valley. Altogether, there is a moderate amount of foundry business moving. A local foundryman is still in the market for from 500 to 1,000 tons of Nos. 1, 2, and 3. There is some inquiry for low phosphorus in comparatively small tonnages.

The idle furnaces in the valleys are now undergoing repairs and are preparing to go into blast when conditions warrant it. Struthers, the operation of which was interrupted by an accident, has resumed on basic.

For third quarter delivery we quote as follows, the higher price on Bessemer being for chill-cast:

| | |
|---|---|
| Bessemer, valley | $15.75 to 17.00 |
| Bessemer, Pittsburg | 16.65 to 17.90 |
| No. 1 foundry, Pittsburg | 16.15 to 16.40 |
| No. 2 foundry, Pittsburg | 15.90 to 16.15 |
| Gray forge, Pittsburg | 14.90 to 15.15 |
| Basic, valley | 15.25 to 15.50 |
| Basic, Pittsburg | 16.15 to 16.40 |

**Ferro-Manganese.**—There is less life in ferro-manganese, but prices are firm. At the present level the market is attractive, and some consumers are figuring on buying for speculation. An inquiry for 600 tons for New York delivery is in the market. We quote 80 per cent ferro-manganese at from $44 to $45 Baltimore, or $45.95 to $46.95 Pittsburg. A price of $70 for 50 per cent ferro-silicon is nominal, three carloads having been taken here this week at less than this figure.

Imported 50 per cent ferro-silicon is quoted $70 Pittsburg on forward deliveries; domestic 12 per cent, $29; 11 per cent, $28; 10 per cent, $27. The lower grades of imported ferro-silcon are upon about the same basis. These quotations are applicable to Pittsburg territory.

**Plates.**—Plates are quiet, but with some concerns, particularly the Carnegie Steel Co., mill operations show improvement. In the case of this company, much of the tonnage is going to the pipe mills to be made into line pipe. Over 1,000 tons of plates for a riveted pipe line by the Arizona Power Co. will be furnished by the Carnegie Steel Co. Several of the independent mills are shading prices. We quote:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.60c f. o. b. mill Pittsburg. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c;

A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

**Sheets.**—Developments in sheets are of a spasmodic nature. The past several weeks have been the most active in months in the specifications coming to the American Sheet & Tin Plate Co., but the movement is now less brisk. Owing to considerable shading of prices in sheets by some makers, there is a lack of confidence among some consumers as to the stability of the market. Stove pipe manufacturers are beginning to come into the market for their requirements. We quote:

Black steel sheets, cold rolled, No. 28 gage, 2.50c per 100 pounds, and galvanized sheets, No. 28 gage, 3.55c per 100 pounds, plus the regular extras.

Blue annealed: Nos. 11-12, 1.85c; Nos. 13-14, 1.90c; Nos. 15-16, 2c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation; and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

**Tin Plate.**—Preparations by canning interests for taking care of the promised large fruit and vegetable crops are going forward steadily, and specifications coming to tin plate makers are heavy. The leading interest has sufficient mill orders to insure a normal operation of its plants well into August, with good prospects for maintaining this activity to Sept. 1. We quote:

Coke tin plate, 100-pound basis, 14 x 20, $3.70 f. o. b. mill Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

**Rails and Track Material.**—The light rail market displays considerable life, the local maker having booked about 1,500 tons this week. Specifications are coming in satisfactorily. The recent action of the re-rollers in raising their prices has improved the situation, but quotations on rails from billets are still being adjusted to meet this competition. The situation in standards is quiet. At the Edgar Thomson works, mills 1 and 2 are operating at below capacity, but mill No. 3 is still idle. On present specifications on Bessemer rails we quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $36; 12-pound, $32; 16-pound, $30; 20-pound, $29; 25 to 45-pound, $28; angle splice bars for standard sections, $1.65; standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

**Steel.**—More orders on contracts are being received from forging concerns and other consumers of billets. A northern Ohio consumer who has been sounding the market for some time is again inquiring for 3,000 tons of Bessemer or open-hearth billets for August and September delivery, and declares he can shade official prices. There is also an inquiry in the market for from 500 to 600 tons of slabs from New York state. Efforts by local users to shade the billet market recently have proven unsuccessful. The sound conditions in tin plate are directing a steady demand for sheet and tin bars to the mills.

Bessemer and open-hearth billets, base sizes, are quoted at $25 Pittsburg, and forging billets at $27 Pittsburg, subject to the division of the freight charge over $1 and not exceeding $3, and sheet and tin bars at $27.50 Pittsburg, valley and Wheeling territory, and $27 Pittsburg for delivery to other points.

**Hoops, Bands and Cotton Ties.**—Anti-liquor crusades have materially affected the business of the coopers, and indirectly the hoop and band market. Some improvement in demand, however, is noted from the south. Cotton ties are moving from the warehouses. We quote:

Cotton ties, 85c per bundle Pittsburg, plus the freight on lots of 3,000 bundles or more, and 88c per bundle Pittsburg for less than 3,000 bundle lots.

Hoops in carload lots, 1.80c; in less than carload lots, 1.90c; bands, 1.40c, base half extras as per standard steel.

**Merchant Bars.**—The heavy contracting for delivery over the next year having practically ended, the interest of steel bar makers has turned to specifications. The situation in this respect has been more favorable this week, and the steel companies are encouraged. The increased prices of scrap have stiffened the re-rolled bar market, and the mills of this class are now quoting 1.30c flat base Pittsburg for reinforcing bars with extras for sizes. The reduction of $5 a ton on hard and $3 a ton on soft cold rolled strip steel, recently put into effect following the reduction in steel bars, has affected conditions in this line but little. The trade in bar iron is still light, but prices outside of eastern mills are firm. The Western Bar Iron Association at a meeting in Detroit last week re-affirmed bar iron prices on a basis of 1.35c Pittsburg. The nine iron mills of the Republic Iron & Steel Co. are still idle, pending the adjustment of its difficulty with the Amalgamated Association over the wage scale. We quote:

Common iron bars, 1.40c Pittsburg in carload lots and over; 1.45c in less than carloads; 1.32c to 1.35c base Pittsburg plus freight to point of shipment on western deliveries; Bessemer steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, under 3 inches, 1.50c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting 56 per cent in carloads, and 52 per cent less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.80c base. Iron finished tire under 1½ by 1½ inches, 1.75c; iron finished tire, 1½ by 1½ inches and over, 1.60c. All tire subject to ½ extra on the steel card.

On cold rolled strip steel, width 1½ inches and wider and 0.100 inch and thicker, we quote base prices per 100 pounds, $3.35 on hard and $3.60 on soft.

**Structural Material.** — Small orders are the rule in structural material. Some of the large companies report an unprecedented number of single orders at the present time, the significance of this statement being that in prosperous times the smaller business was overlooked in the rush for more important contracts. The Homestead mills of the Carnegie Steel Co. continue to run on quite full schedules, about 80 per cent of the open-hearth capacity being in operation this week. Bids were opened by Architect Burnham in Chicago during the past week, for 12,000 tons of steel for the large Oliver business building to be erected

in this city. The American Bridge Co. took 425 tons for the new mining building of the University of Pittsburg. The Pennsylvania railroad has prepared plans for extensive grade crossing improvements through several Pittsburg suburbs, which will require a large tonnage. We quote:

Beams and channels, 15-inch and under, 1.60c; over 15 inches, 1.70c; zees, 1.60c; tees, 1.65c; angles from 3 to 6 inches, 1.70c; universal and sheared plates, 6¼ inches and wider, 1.60c base.

**Merchant Pipe.**—A slight improvement is being maintained in merchant pipe, although jobbers are still very cautious and are ordering only to cover urgent requirements. A local interest this week took 300 tons of large sizes of iron pipe. Conditions in oil field goods are sound, contracting in line pipe being especially promising. An inquiry now in the market which will probably be closed this week, calls for seven miles of 8-inch and smaller pipe for Ohio gas fields. The James S. Corcoran Co., Pittsburg, was awarded the contract this week to lay 100 miles of 20-inch pipe from Cincinnati to Huntington, W. Va. We quote the following official base discount, with an additional one point and five off to jobbers.

| | —Steel— | | —Iron— | |
|---|---|---|---|---|
| | Black. | Galv. | Black. | Galv. |
| ¾ to 6 inches.... | 75 | 65 | 73 | 63 |

**Boiler Tubes.**—Quietness prevails in boiler tubes, but the market appears firm and there is less tendency to grant concessions on the part of certain makers. We quote the following official base discount:

BOILER TUBES.

| | Iron. | Steel. |
|---|---|---|
| 2¼ to 5 inch..... | 52 | 65 |

**Wire Products.**—The trade in wire products is good, more business having been taken in this territory this week than for several months. The belief which prevailed several weeks ago that a further reduction in prices would be made, is disappearing, and jobbers are contracting and specifying more freely. The manufacturing consuming trade however, is more guarded in its orders. We quote:

Wire nails, jobbers' carload lots, $1.95; retailers' carload lots, $2; painted barb wire, jobbers' carload lots, $2.10; retailers' carload lots, $2.15 with 30c for galvanizing; plain wire to jobbers in carloads, 1.80c; and to retailers in carloads, 1.85c.

**Wire Rods.**—There is some activity in wire rods on specifications, and prices continue $33 Pittsburg on Bessemer and $34 Pittsburg on open-hearth rods.

**Coke.**—A fair amount of buying is under way in coke, but the market has a quieter tone. Instances are not infrequent of furnace coke on track being offered below $1.50. Spot foundry sales are also being made around $2. We quote standard Connellsville foundry coke at from $2 to $2.25, and standard Connellsville furnace coke at from $1.65 to $1.85 ovens, lower quotations being for prompt shipment. Statistic compiled by the *Courier* for the week ending July 4, show 16,225 ovens in blast with an output of 165,472 tons, corresponding to 15,362 active ovens and a production of 164,839 tons the previous week.

**Old Material.**—A dealer's market has developed and by bidding among themselves, the middlemen have forced quotations to a higher level. The mills continue in a passive state with respect to the market and their buying is at a minimum. The Pittsburg Steel Co. is putting the finishing touches upon some of its new open-hearth furnaces and is about to become a larger consumer of scrap. It has, however, a sufficient supply of old material for its immediate needs. We quote gross tons delivered in the Pittsburg district as follows:

Heavy melting scrap, $14 to $14.50; rerolling rails, $15 to $15.50; bundled sheet scrap, $11 to $11.50; iron axles, $19 to $20; old iron rails, $16 to $17; No. 1 wrought scrap, $13.50 to $14; old car wheels, $13.50 to $14; low phosphorus, $18 to $18.50; machine shop turnings, $8.25 to $8.75; cast borings, $14 to $14.50.

## CHICAGO.

### Improvement in Finished Lines Due to Activity of Implement Plants.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, July 14.

The splendid prospect before the manufacturers of harvesting implements in particular and implement makers in general has colored the entire market perspective with a hue at least temporarily bright. Most directly has this influence been felt, so far, in the contracting for bars. A little later possibly after a short period of intervening dullness, it will be again manifested in increased specifications against these bar contracts to provide material for beginning work on the output for 1909. The same agricultural prospect is responsible for increased operations among the shops making car repairs and the extent to which the grain carrying roads of the west are preparing equipment for the fall traffic is quite marked. This branch of activity is also adding a measure of activity to roofing sheets, iron bars and track supplies. Wire products also are reflecting the purchasing power of the rural districts and the large requirements of the coming season of harvesting.

In contrast the market for structural steel is very unsatisfactory. The volume of business is no greater than necessity requires consumers to provide, and only small undertakings are being offered for bids. Fabricators continue to make prices that yield little or no profit. The pig iron market is likewise dull and very little iron is being purchased. Encouragement may be found however, in the fact that except for the jobbing foundries, the melt is increasing in tonnage and is extending itself to include a wider range of manufacture. This increase is not large now but if it develops sufficiently to forestall the holding up of shipments on contract iron, the pig iron market has a very good chance to take care of itself on the present level until a more pronounced activity becomes established.

Just at presnt some of the mills are more active than at any time since the first of the year. The South Works of the Illinois Steel Co. for example, have an additional open-hearth furnace working and have in operation the heavy and light rail mills, the sheared plate mill and the structural mill. The plate mill will undoubtedly finish its run this week. The new bar mills of the Inland Steel Co. are completed and are making trial runs. Open-hearth steel will be used entirely.

**Pig Iron.**—The prevailing quiet of the immediate pig iron situation is of a character which might easily develop into a soft market. A slightly greater eagerness on the part of the furnaces than is being displayed just now in following up inquiries, if manifested, would doubtless uncover a decided weakness, particularly with regard to prompt shipment iron. The inquiries now current in this market are for lots of 200, 300, 450 and 700 tons, all foundry iron, and for melting in the foundries of manufacturing plants of general character. These inquiries in number could be totaled on ones' fingers. The sales of the past week have been in similar lots and volume. One lot of 250 tons of Birmingham iron No. 2 grade, was sold at $12, shipment beginning at once. Other lots of iron from furnaces having a $4.35 freight rate to this territory are also reported as bringing no less than $12 furnace. Iron in quantity has been sold to Chicago consumers in the last 10 days however, by furnaces in Tennessee at prices equivalent to $11.50 Birmingham for No. 2, the furnaces conceding to consumers the advantages of freight differentials. One lot of 500 tons, guaranteed to run from 2.75 per cent to 4 per cent silicon brought $15.90, delivered, and a lot of 8 per cent silicom iron

was sold to this territory by a Tennessee furnace for $20.05 delivered. One interest in the south is holding at $12.50 for No. 2. A strike among the coal miners of the Alabama district has been inaugurated, but while this may be the beginning of an obstinate struggle, at present it means no embarassment whatever to the furnaces. The active furnace capacity in this territory has been augmented by the blowing in of one Federal Furnace Co.'s stack at South Chicago. The northern situation is influenced materially by the fact that local interests although buying for delivery outside of this territory, have been able to buy Ohio iron, at prices equivalent to less than $17 Chicago, which is the minimum nominally quoted by local furnaces. Distinctions as to delivery are less marked than a few weeks ago, and we quote as follows for the balance of the year:

| | |
|---|---|
| Lake Superior Charcoal | $19.50 to 20.00 |
| Northern Foundry No. 1 | 17.50 to 18.00 |
| Northern Foundry No. 2 | 17.00 to 17.50 |
| Northern Foundry No. 3 | 16.50 to 17.00 |
| Southern Foundry No. 1 | 16.35 to 16.85 |
| Southern Foundry No. 2 | 15.85 to 16.35 |
| Southern Foundry No. 3 | 15.35 to 15.85 |
| Southern Foundry No. 4 | 14.85 to 15.35 |
| Southern No. 1 Soft | 16.35 to 16.85 |
| Southern No. 2 Soft | 15.85 to 16.35 |
| Southern Gray Forge | 14.35 to 14.85 |
| Southern Mottled | 15.10 to 15.60 |
| Southern Silveries, 4 per cent Silicon | 17.85 to 18.35 |
| Southern Silveries, 5 per cent Silicon | 18.35 to 18.85 |
| Southern Silveries, 6 per cent Silicon | 19.35 to 19.85 |
| Jackson Co. Silveries, 6 per cent | 19.90 to 20.40 |
| Jackson Co. Silveries, 8 per cent | 20.90 to 21.40 |
| Jackson Co. Silveries, 10 per cent | 22.90 to 23.40 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 18.25 to 18.75 |
| Alabama Basic | 16.35 to 16.85 |

**Billets and Rods.**—Occasional orders for lots of forging billets up to carload quantities are reported, but inquiries for steel in this form are few and far between. The demand for wire rods is for current consumption only. We quote rolling billets $26.50 and forging billets $28.50 base, Chicago. We quote f. o. b. Pittsburg, Bessemer wire rods, $33; open-hearth, $34, and chain rods, $33.

**Merchant Bars.**—The joint meeting of the committee from the Western Bar Iron Association with the representatives of the Amalgamated Association resulted in an agreement as to wage scale for the ensuing year after a session lasting four days. In general the results of the conference were to moderate the extremes in the wage scale that had come into effect during the great prosperity of a year ago. As the agreement stands now the boiling scale effective in 1906 and 1907 is again adopted for 1908 and otherwise the new scale offers concessions averaging about 5 per cent. Reflecting most directly at this particular time, the condition of the agricultural implement manufacturers, bar business has come into the condition where manufacturers are no longer concerned about it. Very satisfactory tonnages have been placed in steel bars and specifications antecedent to the beginning of operations on next year's output are beginning to come out in very good volume. Bar iron also is moving in increased quantity and specifications are more desirable and distributed among a more general class of consumers. Car repair shops, everywhere in this territory, are increasing their operations in greater or less degree, and the bar mills are receiving correspondingly increased specifications. Prices are firm and as the tone of business improves they show the effects of competition less. Four mills of the leading producer at Bay View are running, one independent mill at East Chicago is operating continuously and the new merchant mill of the Inland Steel Co., which is unique in that it will operate entirely on open-hearth steel, is ready for work and will soon be turning out bars. We quote prices as follows:

Bar iron, 1.50c to 1.53c; soft steel bars and bands, 1.58c, half extras; soft steel angles, less than 3 x 3, 1.68c; hoops, 1.98c base, full extras; planished or smooth finished tire steel, 1.78c; iron finish, up to 1½ x ½ inch, 1.73c base tire card; iron finish, 1½ x ½-inch and larger, 1.58c base steel card; channel for solid rubber tire, ¾ to 1 inch, 2.08c, and 1⅛-inch and larger, 1.98c; smooth finished machinery steel, 1.83c; flat sleigh shoe, 1.63c; concave and convex sleigh shoe, 1.83c; cutter shoe, 2.05c; toe calk steel, 2.13c; railway spring, 1.93c, base steel card; vehicle spring steel, 1.98c base, vehicle card; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 56 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.90c to 2c, full extras; soft steel bars, 1.80c per 100 pounds base, plus half extras; soft steel hoops, 2.30c, full extras.

**Plates.**—The plate situation is very dull and shows no signs of early improvement. The sheared plate mill at the South Works of the Illinois Steel Co. is still operating on current specifications, but it will shut down again in about a week. We quote as follows:

Plates, ¼-inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.78c Chicago. For extras see Pittsburg report. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼-inch and heavier, up to 72 inches wide, 2c to 2.10c; from 72 to 96 inches wide, 2.10c to 2.20c; 3/16-inch up to and including 60 inches wide, 2.10c to 2.15c; 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.10c to 2.15c; flange and head quality, 25c extra.

**Structural Steel.**—There appears to be an increased volume of inquiry, the increase being in number rather than size. The more general character of business which now includes among the probable buyers many concerns which have been out of the market for months is perhaps the most substantial evidence of improvement. The feeling that lower prices should obtain, still continues to influence consumers of structural material very largely, and it is evident that such orders as are placed embrace only the material which is needed at once. In consequence, the aggregate tonnage placed during the week was small and contracts reported by the leading fabricator totaled only 1,470 tons, all of which was made up of very small orders. The 3,000 tons of material for bridges for the Chicago & Northwestern was not let last week as expected, but undoubtedly will be placed in a day or two. The Chicago, Milwaukee & St. Paul awarded the contract for 660 tons for the river draw to the Wisconsin Bridge & Iron Co., and the price was less than 2½ cents a pound. The Chicago, Burlington & Quincy let a contract for about 250 tons for track elevation at Union avenue, Chicago, and the price at which the work was taken is understood to be less than $48 a ton. The Kenwood Bridge Co. will supply 200 tons of steel for a reduction plant in St. Louis. Prices are far from satisfactory, but quotations remain unchanged as follows:

Beams and channels, 3 to 15 inches, inclusive, 1.78c to 1.81c delivered Chicago. For extras see Pittsburg report. Quotations from store are as follows for carload lots and over:

All angles, 3 inches and larger, including 6 inches, $1.95 per 100 pounds; angles over 6 inches, $2.05 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.95 per 100 pounds, base; channels, 3 inches and larger, $1.95 per 100 pounds, base. Less than carload lots are $1 a ton higher than foregoing prices.

**Rails and Track Supplies.**—A very inactive market prevails in both standard and light sections. The principle producer took contracts for about 1,200

tons of standard sections last week, of which one order called for 700 tons. Among the lighter sections ordered was 250 tons for the city traction lines of Chicago. The rolling mills have made advances ranging from $1 to $2 a ton. Specifications for track supplies are of fair volume and several orders for from 1,000 to 1,500 kegs of spikes were recorded, the purchases having been made by the Chicago & Northwestern, Chicago, Milwaukee & St. Paul, and the Mexican Central. We quote prices without change as follows:

Standard rails, $28 f. o. b. mill, full freight to destination; light rails, 25-pound to 45-pound, $28; 20-pound, $29; 16-pound, $30; 12-pound, $31. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.20c to 2.25c; with hexagon nuts, 2.35c to 2.40c. Small railroad and square boat spikes, 1.90c base, f. o. b. Chicago.

**Cast Iron Pipe.**—The only inquiry of importance embraces 1,000 tons for Cheyenne, Wyoming, to be awarded July 20. Two small contracts were placed, one for 300 tons at Concordia, Neb., going to the United States Cast Iron Pipe & Foundry Co., and one at Batavia, Ill., for 200 tons, going to the United States Wind Engine & Pump Co., of that city. The 3,000-ton contract at Sheridan, Wyoming, while awarded to a contractor, is still contingent upon the sale of bonds. The placing of the Wahoo, Kas., tonnage is also undecided. Prices are without chanage. We quote for Chicago delivery as follows: 4 to 6-inch pipe, $27; 6 to 16-inch, $26; larger sizes, $25; gas pipe, $1 a ton higher.

**Merchant Pipe and Boiler Tubes.**—A generally improved demand from consumers and a larger buying for stock by jobbers has brought about a better movement of tubular goods.

We quote mill discounts, Chicago delivery, carload lots, as below. On steel pipe jobbers are allowed a concession of one point and 5 per cent additional from the schedule in force.

| | —Steel— Black. | Galv. |
|---|---|---|
| ¾ to 6 inches, inclusive | 73.2 | 63.2 |
| 7 to 12 inches, inclusive | 70.2 | 55.2 |

BOILER TUBES.

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 2¾ to 5 in., inclusive | 63.2 | 50.2 | 50.2 |

Mill quotations on iron pipe are three points higher than the foregoing prices.

We have revised our prices from store, as below. A concession of one-half to one point from these prices is allowed by Chicago jobbers on carload orders shipped from local stocks. We quote for less than carload lots as follows:

MERCHANT PIPE.

| | —Steel— Black. | Galv. |
|---|---|---|
| ⅛ to ¼ inch | 65 | 49 |
| ⅜ inch | 67 | 53 |
| ½ inch | 69 | 57 |
| ¾ to 6 inches | 73 | 63 |
| 7 to 12 inches | 69 | 54 |

Store prices for wrought iron pipe, carload lots, from Chicago stock, are as follows: One-eighth to ¼-inch, 61c; ⅜-inch, 63; ½-inch, 65; ¾-inch, to 6 inches, 70; 7 inches to 12 inches, 67. Boiler tubes from store are unchanged.

**Sheets.**—A slight improvement is recorded in the volume of sheet business. This results in part from the demands of agricultural implement manufacturers, in part from car repair work requiring roofing sheets, and also because of a little more generous specifying by jobbers. Prices are not being uniformly maintained, although these irregularities are not being encountered as frequently as heretofore. For mill prices see Pittsburg report. We quote prices for delivery from local stocks:

No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c. Galvanized sheets, No. 10 to 16, 3.05c to 3.10c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 4.00c; No. 30, 4.40c to 4.50c.

**Wire Products.**—The reports from the trade indicate increased operations as well as a heavier demand. In some departments business is reported to be within 10 per cent of normal. We quote:

Wire nails, $2.13; painted barb wire, $2.28; galvanized barb wire, $2.58; smooth annealed wire, $1.98; smooth galvanized wire, $2.28; polished staples, $2.23; galvanized staples, $2.53. Carload lots to retailers, 5 cents higher; less than carload lots, 15 cents higher.

**Coke.**—The coke market shows no apparent changes of interest. Prices hold about the same and we quote for standard Connellsville furnace coke $1.85 to $2, and for foundry coke $2.25 at the ovens.

**Old Material.**—Responding to the improved tone of the market in other branches, prices on scrap have stiffened. There is some actual buying to warrant this, but the upward movement is almost entirely sentimental. Heavy buying in the Pittsburg district has influenced the local situation and the prices offered have been such as to warrant shipment from this territory. A part of 5,000 tons of cast borings for delivery at Breckinridge, Pa., was purchased in the west, a delivered price of $8.75, which includes a $3 freight rate, being offered. Pittsburg dealers have also been quite active in the heavy melting steel market. As indicative of the local situation, one of the railroads received $12.65 net for No. 1 wrought last week. The railroad offerings of scrap this week include 1,300 tons by the Chicago, Milwaukee & St. Paul, 750 tons by the Northern Pacific, and 2,800 tons by the Southern Railway. Our quotations, gross tons, are as follows:

| | |
|---|---|
| Old car wheels | $14.00 to 14.50 |
| Old iron rails | 16.00 to 16.50 |
| Re-rolling rails (3 ft. and over) | 14.25 to 14.75 |
| Old steel rails (3 ft. and under) | 12.75 to 13.25 |
| Light section relayers, 45 lbs. and under, subject to inspection | 21.00 to 23.00 |
| Relaying rails, subject to inspection | 19.00 to 19.50 |
| Frogs, switches and guards | 12.50 to 13.00 |
| Heavy melting steel | 12.00 to 12.25 |

We quote, net tons, as follows:

| | |
|---|---|
| No. 1 R. R. wrought | $12.25 to 12.75 |
| No. 2 R. R. wrought | 11.25 to 11.75 |
| Knuckles, couplers and springs | 11.50 to 12.00 |
| Shafting | 14.50 to 15.00 |
| Iron car axles | 17.00 to 17.50 |
| Steel car axles | 15.50 to 16.00 |
| Dealers' forge No. 1 | 9.75 to 10.25 |
| Pipes and flues | 8.50 to 9.00 |
| No. 1 cast, 150 lbs. and less | 12.00 to 12.50 |
| No. 1 mill | 7.00 to 7.50 |
| Mixed busheling (Nos. 1 and 2) | 7.25 to 7.75 |
| Country sheet | 4.50 to 5.00 |
| No. 1 boiler cut | 8.25 to 8.75 |
| Boiler punchings | 10.00 to 10.50 |
| Cast borings | 4.75 to 5.25 |
| Mixed borings, etc. | 4.75 to 5.25 |
| Machine shop turnings | 5.75 to 6.25 |
| Railroad malleable | 11.50 to 12.00 |
| Agricultural malleable | 10.50 to 11.00 |
| Stove plate and light cast scrap | 10.50 to 11.00 |
| Old iron splice bars | 14.50 to 15.00 |

Rogers-Brown & Co. through the Chicago office, 1515-1530 Corn Exchange Bank Bldg., are extending the scope of their coke department to include the sale of high grade smithing and forging coals. This branch of the coke department will be brought as familiarly to the trade as the handling of coke.

## CLEVELAND.

### Heavy Purchases of Finished Material for Last Half Delivery.

Office of THE IRON TRADE REVIEW, Browning Building, July 14.

**Iron Ore.**—Contracts are now being mailed to furnace interests by the ore producers embodying the new penalty clause referred to last week. A greater concession is allowed producers than heretofore, and the penalty is based entirely on the iron content. For the first unit under the guarantee the penalty is one-half the unit value, but for each succeeding unit the concession is doubled. On the other hand, the bonus to shippers is based on an increasing ratio as the iron content increases.

With the guarantee of 55 per cent on old range Bessemer ores, the bonus on an iron content of 56 per cent would be 1 cent; the bonus on the unit from 56 to 57 per cent, 2 cents; 57 to 58 per cent, 3 cents; 58 to 59 per cent, 4 cents; 59 to 60 per cent, 5 cents; or a total of 15 cents per ton with an iron content of 60 per cent. The system as evolved and adopted, is satisfactory to the furnace operators, who contended that the previous arrangement did not adequately cover the decline in iron content of a few of the Lake Superior ores. Purchases of ore made during the week were limited to small lots entirely, and the merchant furnace interests are still deferring the placing of their contracts notwithstanding the fact that unless shipments from upper lake ports show a material increase during the next few months, an ore shortage will result during the spring of 1909.

The Ashtabula docks were finally opened last week and a few cargoes have already been unloaded at that port. Too many boats are still in commission for the tonnage that is offered, and while the rates on ore and coal are already at cost, there are indications that concessions will be made in the near future. Although all the large iron producers have curtailed their season's ore shipments, one large independent steel interest will bring down as large a tonnage as last year.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70, and Mesabi non-Bessemer, $3.50.

**Pig Iron.**—The largest sale recorded during the week provides for 1,500 tons to be delivered to a local cast iron pipe interest during the third quarter. Sales generally cover current requirements only, and are limited to carload and 100-ton lots. The melt at local foundries from the demand reported by the furnace operators is unusually small. Quotations are revised, as follows:

| | |
|---|---|
| Bessemer | $16.55 to 16.90 |
| No. 1 foundry | 15.75 to 16.25 |
| No. 2 foundry | 15.60 to 15.75 |
| No. 3 foundry | 15.25 to 15.50 |
| No. 2 southern | 15.85 to 16.10 |
| Gray forge | 14.50 to 15.00 |
| Lake Superior charcoal | 19.50 to 20.00 |

**Coke.**—Sales of both furnace and foundry coke for spot delivery are being made at unusually low prices. To prevent accumulation of demurrage on lots shipped on consignment, coke is being sacrificed, and sales of furnace grades have been made during the week at prices ranging from $1.40 to $1.50 at the ovens. On contracts, furnace coke is held at $1.70 to $1.85, and foundry at $2.50 to $2.25.

**Finished Materials.** — The present prices on plates and structural material recently established to apply on shipments to Oct. 1 only, will cover deliveries to Jan. 1. This extension was made largely at the request of the consumers, who, in view of the prevailing depression, did not feel inclined to place contracts for so short a period. As a result of this extension, contracts for large tonnages are being placed by jobbers and fabricators, who are now anxious to have an extension made to July 1, next year. If this is done, it will materially increase the tonnage on orders thus far placed. Purchases during the past week have been larger than at any time since last December. It is estimated that close to 20,000 tons of plates, structural shapes and bars have been contracted for. Re-rolling mills are proving a disturbing factor not only on light rails, but rolled angles and high carbon merchant steel products generally. The base price of high carbon merchant bars, Pittsburg, is $29 a ton, and this quotation is being shaded from $1 to $2. As a result, the tonnage that is now being placed is largely going to the smaller mills. The contract for the Sterling & Welch building has finally been awarded to the Brooks Co., and amounts to 1,400 tons. The bar mills report the receipt of a fair volume of specifications and new orders are limited to small lots almost entirely. It is doubtful if the reduction in the wages of puddlers and finishers will be followed by lower prices on iron.

**Old Material.**—Owing to active competition among dealers for steel, especially re-rollers, prices have advanced 50 cents a ton in the past week. Few mill owners appear to be in the market at this time, and dealers seem to be willing to discount the apparent imminent mill resumption; hence, the price advance. However, general rolling mill material has not followed the steel advance, and this feature of the market is dull. The following prices are quoted f. o. b. Cleveland:

| | |
|---|---|
| Old iron rails | $16.00 to 16.50 |
| Old steel rails (re-rolling) | 14.50 to 15.00 |
| Old steel rails (under 6 ft.) | 14.00 to 14.50 |
| Old car wheels | 14.00 to 14.50 |
| Old steel boiler plate | 12.00 to 12.50 |
| Steel axles | 18.00 to 18.50 |
| Malleable iron (railroad) | 13.00 to 13.50 |
| Malleable iron (agricultural) | 11.50 to 12.00 |
| Heavy steel | 13.50 to 14.00 |
| Country mixed steel | 12.00 to 12.50 |
| Low phosphorus | 16.00 to 16.50 |

We quote, net tons, as follows:

| | |
|---|---|
| No. 1 R. R. wrought | 12.50 to 13.00 |
| No. 1 busheling | 11.00 to 12.00 |
| No. 1 machine cast | 12.00 to 13.00 |
| Iron axles | 17.00 to 18.00 |
| Axle turnings | 9.00 to 9.50 |
| Machine shop turnings | 6.50 to 7.00 |
| Grate bars | 9.00 to 10.00 |
| Pipes and flues | 10.00 to 10.50 |
| Tank iron | 10.50 to 11.00 |
| Hoop and band iron | 7.50 to 8.00 |
| Sheet iron | 4.25 to 5.25 |
| Wrought drillings | 6.50 to 7.00 |
| Stove plate | 10.50 to 11.00 |
| Cast borings | 6.00 to 6.50 |

## NEW YORK.

### Pig Iron Demand Is Limited, but Prices Are Firm.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., July 14.

**Pig Iron.**—Current pig iron buying is of as limited a volume as before the beginning of the recent movement, both inquiries and sales being confined to relatively small lots which do not aggregate an important tonnage. In contrast with the situation in other sections of the country, however, prices are apparently somewhat more firm. One local interest which has been a moderately heavy seller through the past two months now reports a stronger feeling as regards prices than at any other time this year and believes that the long-expected turn has come. It has been a singular fact that throughout the recent spurt of activity business in this territory was done on a steadily sagging scale of prices. Now that the three or four most active producers, however, have taken on enough tonnage to care for their output through the summer months and have succeeded in reducing stocks to a comfortable figure, it is felt that a somewhat higher level will prevail, although for the next six weeks or two months the market will doubtless continue its "spotty" tone to a considerable extent. It develops that sales have been chiefly for early shipment and that relatively little iron has been placed for advanced delivery. With the hot weather to contend with, foundries generally are doing little better than holding their own in point of melt. We quote, New York tidewater delivery, third quarter, as follows:

| | |
|---|---|
| Northern foundry No. 1 | $16.50 to 17.00 |
| No. 2X foundry | 16.00 to 16.50 |
| No. 2 plain | 15.50 to 16.00 |
| No. 2 southern foundry | 16.00 to 16.50 |
| Malleable | 17.50 to 18.00 |
| Basic | 15.00 to 15.50 |
| Gray forge | 15.25 to 15.75 |

**Ferro-Alloys.**—There has been considerable activity in ferro-silicon at unchanged prices, $70.00 for 50 per cent. Ferro-manganese is more quiet, with a limited volume of business at $44.00 to

$44.50, seaboard. Other current quotations are: silico-spiegel, 10 to 12 per cent, $38.00, at seaboard; silico-manganese, $90.00; spiegeleisen, $31.00.

**Finished Materials.**—The construction of the Brooklyn subway (Fourth Avenue) has been shelved for several months at least, through the appointment of a referee to tabulate the current indebtedness of New York City and determine its constitutional borrowing capacity. The consumption of a huge amount of steel is thus indefinitely postponed. It is announced that several millions will be spent in enlarging the Prudential office building in Newark, but this work will not be undertaken until next year. Considerable structural steel and iron work will go into the general utility building for the Newark fire department, E. M. Waldron & Co. of that city, being low bidders on the general contract. The Cornwall bridge, noted a week ago, is understood to have been taken by the American Bridge Co. The Hinkel Iron Works, this city, has the contract for the Phinney loft building on Thirty-sixth street, 300 tons, and will erect another loft building on Twenty-sixth street, requiring about 750 tons. The Milliken Bros., receivers, will furnish 100 tons of steel for the Wm. Kelly factory building in Brooklyn, as well as 300 tons for the Arctic Club, of Seattle.

In cast iron pipe the situation is a little more encouraging to the foundries. Boston will receive bids July 20, on 1,700 tons, ranging from 4 to 40-inch, with fittings. The 700 ton letting in New York went to Louis P. Gregory, who has not yet placed the contract. The contract for 1,000 tons of 14 and 16-inch pipe for Manchester, Mass., was taken by the U. S. Cast Iron Pipe & Foundy Co. at $23.65, delivered. Other bidders were: Warren Fdy. & Machine Co., $23.75; R. D. Wood & Co., $24.05; John Fox & Co., $24.40; Chas. Millar & Son, $24.40; Lynchburg Pipe Foundry, $24.60.

Bar iron is selling locally at about 1.40c, New York delivery, although this figure is occasionally shaded. Current business is light and mills are largely shut down. There is still some activity in steel bars at regular prices. The plate market is quiet, though there is a moderate volume of early delivery business being done. We quote: Angles, 3 to 6 inches x ¼-inch and heavier, 1.76c; beams, 3 to 15 inches, 1.76c; tees, 3 x ¼-inch and heavier, 1.81c; plates, carloads, tanks, 1.76c; marine boilers, 2.16c; bar iron, 1.41c; soft steel bars, 1.56c; sheets, No. 28, black, 2.66c.

**Old Material.**—The curtailed operations of machine shops render supplies light in the various lines there produced and there is considerable demand for borings and turnings, but consumers are unwilling to pay more than the prices quoted. Heavy steel is still difficult to move. Old car axles, both iron and steel, are slightly higher, as is wrought pipe. No important tonnages are changing hands and the market is generally quiet, but the undertone is stronger and a higher level of prices is expected to develop with the return of cooler weather and increased activities. We quote, gross tons, New York delivery, as follows:

| | |
|---|---|
| Old iron rails | $14.00 to 14.50 |
| Old steel rails, re-rolling | 14.00 to 14.50 |
| Relaying rails | 20.00 to 21.00 |
| Old car wheels | 12.00 to 12.50 |
| Old iron car axles | 16.50 to 17.00 |
| Old steel car axles | 15.50 to 16.00 |
| Heavy melting steel | 11.00 to 11.50 |
| No. 1 railroad wrought | 13.50 to 14.00 |
| Iron track scrap | 12.00 to 12.50 |
| Wrought pipe | 10.00 to 10.50 |
| Cast borings | 6.00 to 6.50 |
| Wrought turnings | 7.50 to 8.00 |
| Heavy cast scrap | 12.50 to 13.00 |
| Railroad malleable | 9.00 to 9.50 |
| Stove plate | 9.50 to 10.00 |
| Grate bars | 9.50 to 10.00 |

## CINCINNATI.

### Pig Iron Quiet — Concessions on Southern Grades.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., July 14.

**Pig Iron.**—Business during the week has been quiet, and for the most part consists of small tonnages for third quarter, and carloads for prompt shipment. A few fair-sized orders have been taken for foundry iron at prices under the usual schedule of $12 Birmingham for southern No. 2, and one or two lots of more than 1,000 tons are under negotiation. Some sales of malleable, charcoal, and northern foundry in lots of about 500 tons have been sold on which some concessions have been made. Malleable appears to be well maintained at $15, Ironton. Southern charcoal ranges from $19.50 to $20 Birmingham, and the usual asking price for Bessemer in the Ironton district is $15.75 to $16, but it is intimated that the latter quotation has been shaded to effect sales. The majority of southern producers are inclined to maintain $12 Birmingham, but sales have been made at $11.75, and in a few cases $11.50 has been done. It is reported that consumers are taking their iron for last half delivery quite satisfactorily and the requests for suspension of shipments are few. It is noticeable that manufacturers of articles for the agricultural implement and building trades are apparently consuming pig iron more steadily than others. The call for iron by the foundry trade in this territory continues light, and buying is on an exceedingly limited scale. Reports from furnaces indicate a predominance of the higher grades of iron. The market remains strong, therefore, for low grade iron, with light stocks on the furnace yards. Jackson County, 8 per cent silicon, continues quotable at $18.50, furnace. We quote for prompt shipment and third quarter, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton as follows:

| | PER TON |
|---|---|
| Southern foundry No. 1 | $15.25 to 15.75 |
| Southern foundry No. 2 | 14.75 to 15.25 |
| Southern foundry No. 3 | 14.25 to 14.75 |
| Southern foundry No. 3 | 14.00 to 14.25 |
| Southern No. 1 soft | 15.25 to 15.75 |
| Southern No. 2 soft | 14.75 to 15.25 |
| Southern gray forge | 13.75 to 14.00 |
| Northern No. 1 foundry | 16.70 to 17.20 |
| Northern No. 2 foundry | 16.20 to 16.70 |
| Northern No. 3 foundry | 15.70 to 16.20 |
| Northern 8 per cent silicon | 19.70 |

**Finished Material.**—The market continues quiet with only a fair demand. Specifications on contracts are limited, and new mill business is light. Orders from stock are on a moderate scale. Jobbers' prices on small orders are as follows:

Iron and steel bars, 1.85c to 2c, full extras. Angles, 3 x 3 and over, 2.10c to 2.25c; beams and channels, 15 inches and under, 2.10c to 2.25c; small angles and architectural channels, 2c base; plates, ¼-inch and heavier, 2c; 3/16-inch, 2.10c; No. 8, 2.15c; sheets, blue annealed, No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; box annealed sheets, Nos. 18 and 20, 2.55c to 2.65c; Nos. 22 and 24, 2.65c to 2.75c; Nos. 25 and 26, 2.70c to 2.80c; No. 27, 2.75c to 2.85c; and No. 28, 2.85c to 2.95c; boiler tubes, 2¼ to 5 inches, 62 per cent off base; turnbuckles, 45 per cent off; rivets, 3c base; cold rolled shafting, 47 to 50 per cent off list; steel tire, 2.05c to 2.10c base.

**Coke.**—The situation is unchanged and but little contracting is being done. Ovens hesitate to make commitments for a year ahead at present prices. The call for foundry coke is limited and in a general way the situation is quiet. Contract prices in the leading coke producing districts are as follows:

| | PER TON |
|---|---|
| Wise county furnace coke | $1.60 to 1.85 |
| Wise county foundry coke | 2.10 to 2.25 |
| Pocahontas furnace coke | 1.75 to 1.85 |
| Pocahontas foundry coke | 2.00 to 2.25 |
| Standard Connellsville furnace coke | 1.85 to 2.00 |
| Standard Connellsville foundry coke | 2.25 to 2.40 |
| Connellsville district furnace coke | 1.60 to 1.80 |
| Connellsville district foundry coke | 2.00 to 2.25 |

**Old Material.**—Dealers are carrying liberal stocks and the demand is moderate. There is but little interest in the market and dealers' prices to

consumers remain unchanged as follows:

| | |
|---|---|
| Old No. 1 R. R. wrought, net tons | $11.00 to 12.00 |
| Cast machine and fdy., net tons. | 12.00 to 12.50 |
| Old iron rails, gross tons | 13.50 to 14.00 |
| Old steel rails (re-rolling) gross tons | 12.75 to 13.25 |
| Old short lengths, gross tons | 12.00 to 12.50 |
| Old iron axles, net tons | 15.50 to 16.50 |
| Heavy melting scrap, gross tons | 12.00 to 12.50 |
| Stove plate, net tons | 9.50 to 10.50 |
| Wrought turnings | 5.00 to 6.00 |
| Cast borings, net tons | 4.00 to 4.50 |
| Car wheels, gross tons | 13.00 to 14.00 |

## ST. LOUIS.

July 14.

### Pig Iron Inquiry Limited to Small Lots for Early Consumption.

**Pig Iron.**—St. Louis dealers report the pig iron market dull, but prices remain strong with very little indication that lower figures will prevail in the near future.

Inquiries aggregating 1,300 or 1,400 tons, the largest by any one concern being 500 tons, were received for shipment over the remainder of the year. One inquiry is out for 200 tons for delivery over the first quarter of 1909.

Our quotations delivered, to which $3.75 freight from Birmingham has been added, follow:

| | |
|---|---|
| No. 1 southern | $16.25 to 16.75 |
| No. 2 southern | 15.75 to 16.25 |
| No. 3 southern | 15.25 to 15.75 |
| No. 4 southern | 14.75 to 15.25 |

**Coke.**—Foundrymen are gradually increasing their melt and the demand for coke is improving. Prices are firm at $2.15 to $2.25 ovens, for the best selected 72-hour Connellsville foundry coke for all deliveries.

One sale was made last week by DeCamp Bros. & Yule Iron, Coal & Coke Co. of 5,000 tons of smelter coke for shipment commencing Sept. 1, 1908, and continuing through the remainder of the last quarter. The same company also sold 1,000 tons of Connellsville foundry coke for shipment over the year. Connellsville furnace coke, 48-hour, is quoted at $1.50 to $2 ovens. Virginia and West Virginia 72-hour foundry is held at $2.15 to $2.50 ovens, and Virginia furnace at $1.45 to $1.75 ovens. The freight rate to East St. Louis is $2.80 and to St. Louis $2.90.

**Finished Material.**—Nothing new is reported in this market. Steel rails are practically at a standstill, and local dealers do not seem to take much stock in the report from the east that rails will advance $2 the first of the year. No new buildings are contemplated, and structural iron is not much in demand.

**Old Material.**—The market remains dull, with quotations as follows:

| | |
|---|---|
| Cast iron borings, free from foreign material, net ton | $ 4.50 |
| Steel axle turnings, net ton | 8.00 |
| Steel railroad axles, net ton | 13.50 to 14.00 |
| Iron railroad axles, net ton | 15.50 |
| Miscellaneous steel scrap, gross ton | 9.75 |
| Old car wheels, gross ton | 14.00 to 14.50 |
| No. 1 railroad cast scrap, net ton | 10.50 |
| Heavy machinery cast, net ton | 11.50 |
| Stove plate and light cast, net ton | 9.00 |
| Sheet iron, net ton, uncut | 3.00 |
| No. 1 railroad wrought, net ton | 10.00 to 10.50 |
| Railroad malleable, net ton | 11.00 |
| Heavy melting steel, net ton | 10.00 |

## BUFFALO.

### Lull in Pig Iron—Demand Limited to Small Lots.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, July 14.

**Pig Iron.**—There is a rather unsettled condition in the market this week and while it is not sufficient to modify quotations materially it is necessary that they be approximated. With such uncertainty the prices on small tonnage vary to some extent, although seldom more than 25 cents. Buyers appear to be looking only for small lots for special purposes and none of the big consumers, so far as could be learned, is making inquiries. The demand for charcoal is much stronger this week. We quote f. o. b. as follows:

| | |
|---|---|
| No. 1X foundry | $16.50 to 17.00 |
| No. 2X foundry | 16.00 to 16.50 |
| No. 2 plain | 15.50 to 16.00 |
| No. 3 foundry | 15.00 to 15.50 |
| Malleable Bessemer | 16.00 to 17.30 |
| Gray forge | 15.00 to 15.50 |
| Charcoal | 20.25 to 20.75 |

**Finished Products.**—The Buffalo chapter of the American Institute of Architects has refused to go into the competition for the proposed new $2,000,000 prison building which is to take the place of Sing Sing prison. This action was taken, according to an officer of the local chapter. The federal system of awards is popular locally and the 1909 state legislature will be called upon to adopt this system.

## BIRMINGHAM.

### Strike of Coal Miners Being Vigorously Opposed by Furnace Owners.

Birmingham, Ala., July 13—The Southern pig iron manufacturers appear to have a little trouble on their hands in fighting a strike of the union coal miners, the organization having sent organizers among the coal diggers and induced a number to quit work. The commercial coal operators, with the exception of about six, are now opposing the movement also. The production of iron has not yet been affected though proposed improvement in the output is to be delayed now for a while. The Republic Iron & Steel Co. and the Woodward Iron Co. have each a furnace ready for the torch, but there is to be some delay until the coal mining situation clears up, which is believed to be certain in a few weeks. The operators of furnaces and mines declare positively that there is to be no giving in to the organization.

A little business in pig iron is being received in this district, although in small lots. Prices hold firm for the product above $12 per ton, No. 2 foundry. It is expected that by the 20th. inst the two blast iron furnaces mentioned above will be in operation and that the output will be improving right along. The business on the books already will require about as much iron as can be made at the present rate through the remainder of the year.

The steel plant at Ensley, Tennessee Coal, Iron & Railroad Co. is doing as well as the most sanguine could expect. The rail department made an hour's record the past week, producing 109 tons of rail in sixty minutes.

## PHILADELPHIA.

### Eastern Pig Iron Producers Take a Firm Stand Against Further Concessions.

Office of THE IRON TRADE REVIEW,
408 Central Trust Bldg., July 14.

**Pig Iron.**—In a dull market like the present it is a hopeful sign that some producers have taken a firm stand against any further concessions, and have advanced the figures at which they are willing to meet buyers. With these the foundation price, $16.50 for No. 2X foundry, has been raised to $16.75 for third quarter deliveries, and for the last quarter 50 to 75 cents is added. No notable sales have been made during the week, but the volume of small and moderate-sized orders is enough to more than cover current production and to lead to a steady depletion of stock piles. These are no longer the menace that they were, and as they gradually diminish it is hoped that prices will improve, and more furnaces can be put in blast. The feeling is now more cheerful and optimistic than it has been for a long time. Reports from foundries show better business, and the larger concerns are also more active. Prices show no change as follows:

| | |
|---|---|
| No. 1X foundry | $17.00 to 17.50 |
| No. 2X foundry | 16.50 to 17.00 |
| No. 2 plain | 16.00 to 16.50 |
| Standard gray forge | 15.25 to 15.50 |
| Basic | 15.25 to 15.50 |
| Low phosphorus | 21.00 to 21.50 |
| No. 2 Birmingham | 16.00 to 16.50 |

**New Material.**—There is a slight increase in the percentage of capacity at which the mills are working, but Eastern establishments still fail to note that buoyant tone which Pittsburg seems to be taking on. Still the feeling is better than it was. The Baldwin Locomotive Works, which pretty accurately gage the demands of the railroads, have put on more men and increased the hours of labor, and railroad traffic seems to be gaining.

## GERMAN IRON MARKET.

**Pig Iron and Semi-Finished Steel Reduced—Rolling Mills Shut Down.**

Dusseldorf, June 30.—No improvement is noted in the iron and steel trade, and prices of pig iron and semi-finished steel products have been reduced $1.20 per ton. Consumers are still looking forward to lower values and are deferring purchases. Our great syndicates have at last come to the conclusion that their price maintenance policy can no longer be sustained, but their reductions were made too late to stimulate buying.

The production continues to be greatly in excess of requirements and stocks are constantly increasing. The pig iron syndicate has orders for only 42 per cent of the capacity of its works. Coke production, which ranged from 65 to 85 per cent of total capacity during the last two months, has been reduced to 60 per cent.

Some 30 rolling mills that do not dispose of their raw material, consuming their entire production, have been compelled to shut down. The proposal of the mills compelled to purchase their steel in the open market, to abolish the import duty on pig iron and billets, is under consideration, but six months at least will elapse before action can be taken.

# METAL MARKET

## NEW YORK.

July 14.

**Copper.**—The stronger tone reported a week ago has resulted in considerable business being placed, but without any advance in prices, as producers were free with their offerings. The market is now slightly more quiet, with quotations unchanged: Lake, 12¾c to 13c; electrolytic, 12½c to 12¾c; casting, 12⅜c to 12½c.

**Pig Tin.**—Following the British market, which has developed considerable strength, the local situation has become more firm and current sales are being made at the level of 28¼c for spot metal.

**Pig Lead.**—Speculative interests are largely meeting the moderate demand on the part of consumers and the price level is slightly lower, being about 4.42½c to 4.45c, New York delivery.

**Spelter.**—In a dull market, in sympathy with the situation abroad, prices have barely held their own, the current quotation being 4.45c to 4.50c, New York.

**Antimony.** — We quote: Cookson's, 8⅝c to 8¾c; Hallett's, 8¼c to 8½c; ordinary brands, 8c to 8½c.

## CHICAGO

July 14.

The metal market has been quiet this week with still further weakness in lead as the only change. Copper metal has been sold in small lots but the activity has been too limited to bring about any changes in price. We quote as follows:

Lake copper, 13½ to 14c; casting, 13¼c to 13½c; pig tin, 31½c to 32c; spelter, 4.85c to 5.00c; pig lead, desilverized, 4.45c to 4.60c in 50-ton lots; corroding, 4.60c to 4.70c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 7c list, f. o. b. LaSalle, in car lots of 600-pound casks; Cookson's antimony, 11c to 11½c; other grades, 10c to 10½c.

The trading during the past week in old metals has been meager and prices remain without change. We quote to dealers as follows:

Copper wire, 11c; heavy copper, 11c; light copper, 10c; heavy red brass, 10c; heavy yellow brass, 8¼c; light brass, 5½c; No. 1 red brass borings, 8c; No. 1 yellow brass borings, 7½c; brass clippings, 8c; tea lead, 3½c; lead scrap, 3¾c; zinc, 3c; tin pipe, 20c; tin foil, 16c; pewter, 3c; electrotype plates, free from wood, 14c; electrotype dross, 2¾c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc, $55 per ton.

## ST. LOUIS.

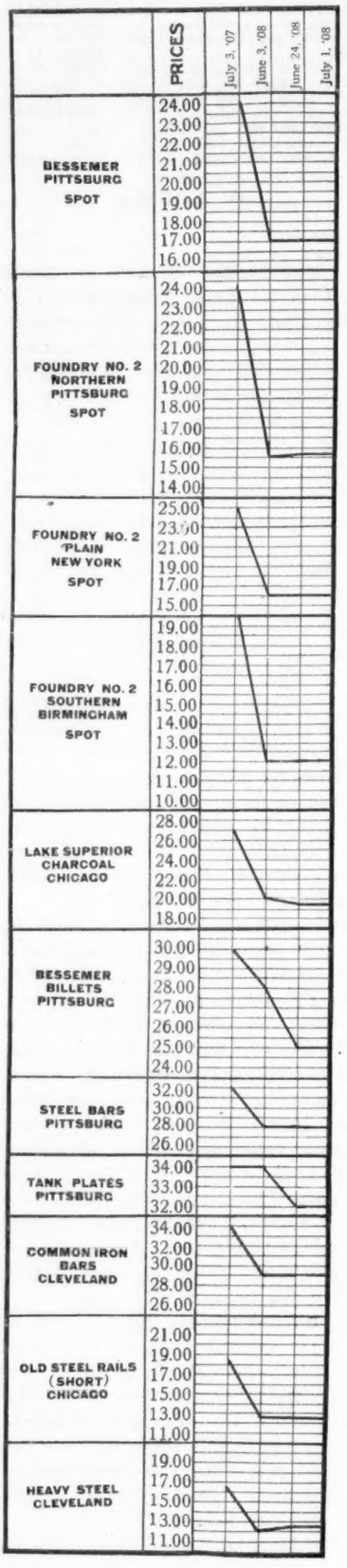
July 13.

**Lead and Zinc.**—Prices on both ores were lowered last week in the Joplin district. The highest base price paid for zinc was $35.50 a ton as against $36, the previous week, and some ore was settled for on a base price as low as $30 a ton for 60 per cent zinc.

Some lead ore was settled for as high as $64 a ton, but it had been purchased the previous week. The highest offering for last week was $60 a ton.

Miami, the new mining camp, has taken fourth place in the value of its ores and shows a forward movement in production. The large increase from this camp and the resumption of work in other portions of the district by a number of mines last week, materially increased the output, and a still greater increase is promised for this week.

## PRICE CHART.



## PENALTY CLAUSES.

(Continued from first page.)

cent; when more than 56 per cent, but not more than 57 per cent, for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of two cents; when more than 57 per cent, but not more than 58 per cent, for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of three cents; when more than 58 per cent, but not more than 59 per cent, for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of four cents; when more than 59 per cent, but not more than 60 per cent, for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of five cents; when more than 60 per cent, each unit or fraction thereof of excess shall be figured at said base unit value. And in case of excess of phosphorus over and above the estimated quantity, settlement shall be made according to the table of phosphorus values.

### Non-Bessemer Penalty Clause.

The penalty clause in the non-Bessemer ore contract follows:

The price of this ore is named and accepted on the expectation that the ore will average ..... per cent in metallic iron in its natural condition. Taking this as the standard of quality, it is agreed that any total average variation therefrom in metallic iron shall be entitled to recognition and adjustment by increase or abatement in price, as the case may be, at the rates per unit, per ton, hereinafter specified. When this ore contains 50 per cent to 53 per cent (both inclusive) of metallic iron, the value per unit or fraction thereof is at the rate of ....., known as the base unit value; when less than 50 per cent, but not less than 49 per cent, for such unit or fraction thereof of decrease only, said base unit value shall be increased at the rate of one-half thereof; when less than 49 per cent, but not less than 48 per cent, for such unit or fraction thereof of decrease only, said base unit value shall be increased at the rate of 100 per cent thereof; when less than 48 per cent, the value shall be at the rate of ..... cents per unit or fraction thereof; when more than 53 per cent, but not more than 54 per cent, for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate one cent; when more than 54 per cent, but not more than 55 per cent, for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of two cents; when more than 55 per cent, but not more than 56 per cent, for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of three cents; when more than 56 per cent, but not more than 57 per cent, for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of four cents; when more than 57 per cent, but not more than 58 per cent, for such unit or fraction thereof of excess only, said base unit value shall be increased at the rate of five cents; when more than 58 per cent, each unit or fraction thereof of excess shall be figured at said base unit value.

## WESTINGHOUSE ORDERS CONTINUE TO SHOW IMPROVEMENT.

An improvement is shown in the business being booked by the Westinghouse companies, a number of good sized contracts having been taken recently, among them the following: Metropolitan Street Railway Co., Kansas City, Mo., 15,000 horsepower, consisting of a steam turbine, to be furnished by the Westinghouse Machine Co., and an electric generator of equal size and capacity, to be made by the Electric Co.; the Narragansett Electric Light Co., Narragansett, Conn., 5,000-horsepower Westinghouse steam turbine and a Westinghouse turbo-generator of the same size; the Mohegan Oil & Gas Co., Akron, O., two 1,500 horsepower twin tandem double-acting horizontal Westinghouse gas engines; the Pressed Steel Car Co., Pittsburg, one 1,500 horsepower low pressure turbine and two 750 horsepower, with the corresponding electric generators; the Coronet Mining Co., Florida, three 750 horsepower steam turbines, electric generators and auxiliary electrical apparatus, as well as condensers; Bollinger & Andrews, Pittsburg, two 150 horsepower gas engines from the Machine company, and a Westinghouse gas engine of several hundred horsepower, with a gas producer, from the company's Mexican agent, G. O. Braniff & Co., Mexico City. Orders have also been received for automatic stokers from the National Tube Co., McKeesport, from the Berwind-White Co., Windber, Pa., and the Public Service Railway Co., Newark, N. J.

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**Reeves Makes Proposal.**—A movement is on foot through the Industrial Bureau of Cincinnati to finance either a branch of the Reeves Engine & Machine Co., of Trenton, N. J., or to bring about the movement of that plant to Cincinnati. A syndicate has been formed which will make a complete investigation of the proposition, both from the books of the company and the merits of the product. Should this investigation verify statements now before the capitalists, the syndicate will finance the deal, which involves about $100,000. Chester Reeves, of the Reeves company, has presented the proposition to the officers of the Industrial Bureau.

## M'INNES STEEL CO. CONTINUES WITH ITS CAPACITY RECORD.

The McInnes Steel Co., Ltd., Corry, Pa., is one of the very few exceptions in the iron and steel trade which has been enabled to keep its plant operating continuously at full capacity during the past nine months. The growing favor of "Cello" steel, a new steel manufactured by the company, is responsible for the good record of activity. This is a steel considerably denser than ordinary tool steel, and is made especially for dies, taps, reamers and any special tool. It is especially suitable for dies, as in hardening, the steel does not vary 0.005 of an inch.

Though no special treatment for hardening is required, it is advised that in using, particular care be taken to protect the steel from direct contact with the blast or the flame. An open fire is undesirable, but when no means are available other than an open blacksmith's fire, a large hollow coal fire should be made or bricked up to form a heating box, and this filled with well burnt coal over the blast. If possible a piece of thin sheet iron may be laid over the bed of the fire, and the steel may be heated over this covering. The steel should then be allowed to soak in the fire with very little or no blast until it becomes thoroughly heated.

At the St. Louis Exposition "Cello" steel was awarded the grand prize for high speed steel. The citizens of Corry, in recognition of this distinction, had the exhibited tool mounted on a shield and this was presented to the company by them. The shield is now the company trademark. Until 14 years ago, Andrew McInnes, president of the company, was superintendent of the Twenty-ninth street Pittsburg mills of the Carnegie Steel Co.

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**Prepare to Mine Soon.**—President P. J. Hannan and Secretary P. E. Hickey, of the Eureka Mining Co., which owns brown ore lands in Russell county, Ala., are visiting the mines for the purpose of getting them in operation as soon as possible. Mining machinery is being installed and washers erected. The Eureka company was incorporated early in the spring to take over certain iron ore leases.

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The entire plant of the J. & P. Coats thread mills at Pawtucket, R. I., is now being driven by electrical power.

# THE IRON TRADE REVIEW

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## AN AUSPICIOUS BEGINNING.

The steel industry has opened the second half of the year very auspiciously. While the market has been relatively quiet, production has not suffered as it was predicted not long ago that it would, on the basis that, barring exceptional times, production always falls off greatly in July. Evidently this is one of the exceptional years.

The crops are practically assured, the position indicating better crops than last year. Corn promises a gain of 5 per cent, wheat nearly 10 per cent, and oats nearly 50 per cent. The presidential campaign does not promise any danger to industry. There is no great issue involved as there was in 1892 or 1896. The present depression is not due to the impending campaign, but follows the financial troubles of last year; industry is passing away from the cause, rather than approaching it.

There is plainly evident throughout the iron and steel industry an optimism which is really felt. The word "optimism" with its adjective variations, "conservative optimism," etc., was badly overworked during the first half of this year, but the sentiment was professed rather than felt. The iron and steel trade well knows how much it is governed by sentiment, if the sentiment is really felt, and how little it heeds any profession if the sentiment is not felt.

The disposition is growing on the part of large corporate interests to contribute to the return of prosperity by the actual placing of business. The start will mean much, and a moderate resumption of activity can easily be brought about by such means.

It is not possible for all lines of iron and steel manufacture to burst into activity at once. Consumptive needs vary and some lines will quicken before others, depending on their fundamental requirements and how long the wait can be prolonged before they are filled. Tin plate is an illustration of how short the wait is in one line. Tin plate is the one steel commodity which is actually consumed each year. There was a wait in tin plate, but it was a wait of only a month or two, consumers having some stocks to work off at the beginning of the year and being unwilling to accumulate any. The starting of the tin plate mills into full activity was delayed about a month and a half at the beginning of the year, but once started the mills have run full and now in July are in full operation when normally about half are closed. In sheets the next earliest resumption is probable, as sheet consumption cannot wait long, and thus one line after another is likely to feel the quickening.

## THE STATISTICAL RELATIONS BETWEEN STEEL AND WOOD.

It is a matter of common knowledge that men whose lives are given to the steel business usually have but the faintest conception of its quantities as related to the affairs of other industries. A group of representative men drawn from different branches of the industry once developed a discussion, with the strength about equally divided on each side, as to whether eggs or pig iron showed the greatest per capita production, measured in pounds. To settle the matter inquiries were started as to the production of each, but when it was found the production of pig iron was well over one pound per capita per day, it was concluded that statistics of the egg production need not be sought.

Sometimes these statistical comparisons are useful, and at the present time a comparison of the statistics of steel and wood should be valuable. In the iron industry there are questions whether the rate of increase in output hitherto shown—a doubling in pig iron every nine years—can be maintained, and indeed the question has arisen whether even the former rate of output can soon be regained. The steel industry cannot make the answer; it must come from without, being dependent upon the factor of demand from the general public.

The lumber industry, on the other hand, is confronting the certainty of an early exhaustion of all the wood in the country if the present rate of cutting is continued. The Forest Service has done much good in gathering statistics on this subject, and has presented figures which may be useful to the lumber industry.

The iron industry speaks glibly of a production of 25,781,361 gross tons of pig iron last year, of nearly 20,000,000 tons of rolled iron and steel, of 6,000,000 or 7,000,000 tons of iron castings, and so on. From the realms of wood come figures with equal glibness. There is a "stumpage" of between 1,400 and 2,000 billion feet; the consumption of wood is estimated at from 100 to 150 billion board feet a year, and in the past few days it has been announced that through the work of the Bureau of the Census, aided by the Forest Service, the cut of lumber last year is found to have been 40,256,000,000 board feet, against 37,551,000,000 board feet in 1906.

Steel, it is said, has been replacing wood quite largely, and is going to replace it altogether. Would it mean

much or little for the steel industry to have this work to do? What do these statistics of steel and wood mean in terms of each other? Doubtless it is safe to assert that not one steel man in ten has the faintest conception of what the lumber output means, and the other side is equally unposted as to the steel industry. Before attempting to put the statisics of iron and wood on a comparable plane, a few statements may be repeated from a recent publication of the Forest Service, showing the certainty of an early exhaustion of our timber supplies. Assuming the smallest of the current estimates of the total of standing timber, and the smallest estimate of consumption, with no allowance for growth, exhaustion is indicated in 14 years; assuming a growth, the time becomes 23 years; assuming the largest annual use, these figures change to 9 and 13 years; assuming the largest estimate of standing timber, these same figures indicate exhaustion in various periods from 13 to 33 years. These estimates were made before the 1907 statistics of lumber cut were obtained, while they show an increase of 7 per cent in one year, indicating that the estimates of probable life were optimistic, as none of them take into account any increase in the consumption. The problem of steel versus wood, then, is one for the next few years.

It may be convenient to reduce iron and wood to a per capita basis. The population of the United States in the middle of 1907 was 86,070,000. The pig iron production in the year was 25,781,361 gross tons, which means 671 pounds per capita. The lumber cut was 40,256,000,000 board feet, which means 468 board feet per capita. The use of wood was much greater since much wood was used which was not cut up, and this total simply represents the output of the mills. Undressed poles and hewed cross ties are used, as well as undressed fence posts, round mine timbers, etc., while there is a great deal of waste, and some wood is used for fuel. The steel industry may concern itself with the lumber cut, since there is little sawed lumber used which, in a pinch, steel could not replace. There is room for steel outside of lumber, also, as in the case of hewed ties and poles.

It is true that all of the 671 pounds per capita of pig iron produced last year was not converted into steel, but some of it merely stopped on the way because a use was found for it without the conversion. Converted into steel it would have made about 600 pounds, say one and a quarter pounds of steel for each board foot of lumber produced. These are comparable quantities; millions of tons of pig iron and billions of board feet of lumber are not.

Twenty-two gage sheet steel weighs one and a quarter pounds per square foot, so that if all the pig iron had been converted into such steel sheets and all the lumber had been cut into boards one inch thick, the areas covered would be the same. The comparison is not without point, since somewhat lighter lumber than this is used for weather boarding, partitions, lath, etc., while much lighter steel is used for siding, expanded metal lath, etc.

A white pine beam 1 x 12 inches, 12 feet span, will carry a safe load, uniformly distributed, of 1,000 pounds. An 8-inch, 18-pound steel beam, same span, will carry 12,000 pounds, uniformly distributed. With these elements, then, 18 pounds of steel are comparable in carrying capacity to 12 board feet of lumber, and here again the statistics meet on a comparable basis.

Many other comparisons could be made, but these are sufficiently indicative of the importance of given lines of consumption when referred to either industry. It may be said roughly that the two industries meet on an equal basis in point of volume and that, practically speaking, if 10 per cent of the lumber formerly used is replaced by steel, it will add 10 per cent to the steel demand. In some ways a pound and a quarter of steel will do greater service than a board foot of wood, and in other ways it may not be able to do as much. Eight-inch I-beams could not replace wooden beams of 12 inches depth, because the latter are 12 inches thick to bear the same load, and are usually cut to six pieces, distributing the floor load better. Different forms of construction, however, can go far to bridge the gap and bring the materials more on a par. The steel starts out with an advantage, as a pound and a half of beam, compared in carrying capacity to a board foot of joist, does not cost as much as the latter at present prices.

The points at which steel and wood are to meet in competition are so many that the working out of the competition, with the gradual replacement of wood by steel, will afford many interesting problems and much room for inventive and constructive skill.

## REBUILDING ROLLING MILL AT COVINGTON, KY.

The incorporation papers of the Licking Rolling Mills Co., were filed the first of the month at Covington, Ky. The capital stock is fixed at $50,000, divided into 100 shares of $500 each. The shareholders as well as the incorporators are John C., Fred J., and William J. Droege.

The company became involved in litigation early in the spring, which resulted in the removal of a receiver, and the business was placed again in the hands of the Droeges who had operated the plant for years. Last January the mill was damaged by fire, and rebuilding was not attempted until the court's decision was handed down July 1, upholding the contention of the Droeges. Work upon reconstructing the plant at Covington is now well under way.

**Crocker-Wheeler Officers.**—The following officers of the Crocker-Wheeler Co., manufacturer of electrical equipment, Ampere, N. J., were elected July 10: President, S. S. Wheeler; vice president and chief engineer, Gano Dunn; second vice president, A. L. Doremus; secretary, Rodman Gilder; treasurer, W. L. Brownell; assistant secretary, J. B. Milliken; assistant treasurer, G. W. Bower.

Every freight car on the Pittsburg, Bessemer & Lake Erie railroad is in service, and from Conneaut Harbor, O., 650 cars loaded with iron ore are being hauled south every day.

# AGREEMENT

## ON BAR IRON WAGE DISPUTE IS REACHED.

### Reductions of 7 to 10 Per Cent Accepted by Employes on Both Boiling and Finishing Scales After Five Days' Conference.

An amicable adjustment of the boiling and finishing scales for the year ending June, 1909, was reached Saturday, July 11, at the second conference between representatives of the Western Bar Iron Association and the Amalgamated Association of Iron, Steel & Tin Workers, which began in Detroit, July 6. Contrary to expectations which contemplated a definite and sharp disagreement in case an immediate understanding was not arrived at, the six conferees did not feel impelled to call in the seventh arbitrator as is provided by the terms of the so-called "continuous" wage agreement which still obtains between the Amalgamated Association and the Western Association. The men in the settlement accepted a reduction over the 1907-08 scale, which varies according to the different divisions but as a whole approximates an average of from 8 to 10 per cent.

Upon the 1.35c Pittsburg price for bar iron now prevailing, the new puddling rate is $5.37½ a gross ton, corresponding to $5.87½ on the past year's scale, a reduction of 8.5 per cent; in bushcling on cinder bottom, the new rate is $2.58 on heavy scrap and $3.35 on light scrap, against $2.79 and $3.67, respectively, in the old scale, or reductions of 7.5 and 8.7 per cent; in busheling on sand bottom the new rate is $2.12½ on heavy, and $2.58 on light scrap, against $2.27½ for the heavy and $2.79 for the light or reductions of 6.6 and 7.5 per cent; in muck rolling the new rate is $0.74½ against $0.839, a reduction of 11.2 per cent; in piles on boards the new rate is $1.60½ against $1.69½, a reduction of 5.3 per cent.

Under the new finishing scale in the bar and 12-inch mills, the heater will receive on a 1c bar iron card, $0.54 against $0.583 under the old scale, a reduction of 7.3 per cent; the roller, $0.363 against $0.382, a reduction of 5.2 per cent; the catcher $0.195 against $0.205, a reduction of 4.8 per cent; the rougher up and rougher down $0.164 against $0.177, a reduction of 7.9 per cent.

Under the new guide, 10-inch, hoop and cotton tie scale, the roller will receive on a 1c bar iron card, $1.01 against $1.097, a reduction of 7.9 per cent; the heater $0.54, against $0.583, a reduction of 7.3 per cent and the rougher and catcher, each, $0.29, against $0.315, a reduction of 7.9 per cent.

The scales as agreed upon at the Detroit conference are substantially as follows:

| | Boiling. | Swarth. | Cinder Bottom Busheling Heavy. | Light. |
|---|---|---|---|---|
| 1c Bar Iron.. | 5.00 | 4.50 | 2.28 | 2.97 |
| 1.05 ..... | 5.00 | 4.50 | 2.28 | 2.97 |
| 1.10 ..... | 5.00 | 4.50 | 2.28 | 2.97 |
| 1.15 ..... | 5.00 | 4.50 | 2.34 | 3.04 |
| 1.20 ..... | 5.00 | 4.50 | 2.04 | 3.12 |
| 1.25 ..... | 5.12½ | 4.62½ | 2.46 | 3.20 |
| 1.30 ..... | 5.25 | 4.75 | 2.52 | 3.28 |
| 1.35 ..... | 5.37½ | 4.87½ | 2.58 | 3.35 |
| 1.40 ..... | 5.50 | 5.00 | 2.64 | 3.43 |
| 1.45 ..... | 5.62½ | 5.12½ | 2.70 | 3.51 |
| 1.50 ..... | 5.75 | 5.25 | 2.76 | 3.59 |
| 1.55 ..... | 5.87½ | 5.37½ | 2.82 | 3.66 |
| 1.60 ..... | 6.00 | 5.50 | 2.88 | 3.74 |
| 1.65 ..... | 6.12½ | 5.62½ | 2.94 | 3.82 |
| 1.70 ..... | 6.25 | 5.75 | 3.00 | 3.90 |
| 1.75 ..... | 6.37½ | 5.87½ | 3.06 | 3.97 |
| 1.80 ..... | 6.50 | 6.00 | 3.12 | 4.05 |
| 1.85 ..... | 6.62½ | 6.12½ | 3.18 | 4.13 |
| 1.90 ..... | 6.75 | 6.25 | 3.24 | 4.21 |
| 1.95 ..... | 6.87½ | 6.37½ | 3.30 | 4.28 |
| 2.00 ..... | 7.00 | 6.50 | 3.36 | 4.36 |

| | Busheling on Sand Bottom Heavy. | Light. | Muck Rolling. | Heating Piles on Boards. |
|---|---|---|---|---|
| 1c Bar Iron.... | 1.95 | 2.28 | 0.64 | 1.50 |
| 1.05 ..... | 1.97½ | 2.28 | 0.65½ | 1.51½ |
| 1.10 ..... | 2.00 | 2.28 | 0 67 | 1.53 |
| 1.15 ..... | 2.02½ | 2.34 | 0.68½ | 1.54½ |
| 1.20 ..... | 2.05 | 2 40 | 0.70 | 1.56 |
| 1.25 ..... | 2.07½ | 2.46 | 0.71½ | 1.57½ |
| 1.30 ..... | 2.10 | 2.52 | 0 73 | 1.59 |
| 1.35 ..... | 2.12½ | 2.58 | 0.74½ | 1.60½ |
| 1.40 ..... | 2.15 | 2 64 | 0.76 | 1.62 |
| 1.45 ..... | 2.17½ | 2.70 | 0.77½ | 1.63½ |
| 1.50 ..... | 2.20 | 2.76 | 0 79 | 1.65 |
| 1.55 ..... | 2.22½ | 2.82 | 0.80½ | 1.66½ |
| 1.60 ..... | 2.25 | 2 88 | 0.82 | 1.68 |
| 1.65 ..... | 2.27½ | 2.94 | 0.83½ | 1.69½ |
| 1.70 ..... | 2.30 | 3.00 | 0 85 | 1.71 |
| 1.75 ..... | 2 32½ | 3.06 | 0.86½ | 1.72½ |
| 1.80 ..... | 2.35 | 3 12 | 0.88 | 1.74 |
| 1.85 ..... | 2.37½ | 3.18 | 0.89½ | 1.75½ |
| 1.90 ..... | 2.40 | 3.24 | 0 91 | 1.77 |
| 1.95 ..... | 2.42½ | 3.30 | 0.92½ | 1.78½ |
| 2.00 ..... | 2.45 | 3 36 | 0.94 | 1.80 |

BAR AND 12-INCH MILLS.

| | Heater. | Roller. | Catcher. | Rougher Down. | Rougher up. |
|---|---|---|---|---|---|
| 1c Bar Iron.. | 54 | 36.3 | 19 5 | 16.4 | 1.64 |

These are base rates and advance in the same proportion as scale of 1907-08.

The words "steel axles" to be eliminated from Foot Note No. 7 of Bar Mill Scale.

GUIDE, 10-INCH, HOOP AND COTTON TIE MILLS.

| | Roller. | Heater. | Rougher and Catcher (each) |
|---|---|---|---|
| 1c Bar Iron.. | $1.01 | 0.54 | 0.29 |

These are base rates for base sizes and advance in same proportion as 1907-08 scale.

Prices for extra sizes to be reduced at same percentage, which is approximately 7.8 per cent.

Foot notes same as last year, except as effected by transfer from memorandum of agreement.

The Western Bar Iron Association as it was constituted last year at the signing of the scale with the Amalgamated Association consisted of the following companies: American Car & Foundry Co., three plants, Detroit, Madison, Ill., and St. Louis; Interstate Iron & Steel Co., East Chicago, Ind.; Ft. Wayne Iron & Steel Co., Ft. Wayne, Ind.; Highland Iron & Steel Co., Terra Haute, Ind.; National Rolling Mill Co., Vincennes, Ind.; Lake Erie Iron Co., Cleveland; Empire Rolling Mill Co., Cleveland; Union Rolling Mill Co., Cleveland; Ohio Falls Iron Co., New Albany, Ind.; Shenango Iron & Steel Co., Wheatland, Pa., and Youngstown Sheet & Tube Co., Youngstown, O. In the settlement this year the Youngstown Sheet & Tube Co. was not regarded as a member of the Western Bar Iron Association, but it has the privilege of signing the new scale and it is expected that it will do so.

The settlement of the Western Bar Iron Association puts wage matters with the Amalgamated Association well out of the way this year with the exception of the deadlock now existing beween the latter and the Republic Iron & Steel Co. Conferences are expected to be arranged with the Republic company at once, and with the Detroit agreement as a guide, it is anticipated that an adjustment will be reached.

## PLAN TO KEEP DUNCANNON IRON CO. OUT OF COURTS.

A meeting of the creditors of the Duncannon Iron Co., whose plant is at Duncannon, Pa., was held in Philadelphia last week to see if its affairs could be adjusted without recourse to the courts. In behalf of the company a proposition was made for an extension of claims by an issue of rates running one, two, three and four years. If this was done it was said that $60,000 additional capital would be contributed and the plant would be changed to a new line of products from which good profits could be expected. For a long time the output has been chiefly bar iron, and it is the low price of this that has brought about the present trouble. Horace L. Haldeman was appointed chairman of a committee of creditors to consider the situation. It was stated that the assets of the company, including the plant, were $350,000, and the liabilities $250,000. The company is one of the oldest in Central Pennsylvania.

At the last annual meeting of the directors of the Modern Machinery & Engineering Co., 309 Schofield building, Cleveland, T. F. Ahern was elected president and treasurer, Robert M. Brownson, vice president, and James M. Hibbard, secretary. Mr. Hibbard, of Detroit, is a new member of the organization, having acquired a considerable interest in the company last year.

## THREE STACKS LEASED.

**Virginia Properties Taken Over for Three Years by New Corporation.**

The Oriskany Ore & Iron Corporation, which was chartered recently as noted in THE IRON TRADE REVIEW of July 2, is a corporation composed exclusively of Virginia investors, and has leased for a period of three years the properties of the Allegheny Ore & Iron Co. This property includes three blast furnace stacks, as well as iron ore mines. The stacks covered by its lease are the Allegheny furnace at Iron Gate, Va., the Buena Vista stack at Buena Vista, Va., and the Gem stack at Shenandoah, Va. The total annual capacity of the three stacks is estimated at 120,000 gross tons. The Iron Gate stack, which had been banked for a period of two months, has been blown in by the lessee, and is making a good run. The ore used at the Gem stack is mined on furnace property. All these stacks have up until the present lease been out of blast.

The officers of the Oriskany Ore & Iron Corporation are: President, R. L. Parrish, Covington, Va.; vice president and general manager, W. W. Taylor; secretary, B. T. McPeak, Covington, Va. The operating force is the outgrowth of the Allegheny Ore & Iron Co., W. W. Taylor having been superintendent of that company since its incorporation. John W. Stull, who has been in charge of the Oriskany mines, is retained as superintendent there, and O. M. Stull, formerly superintendent of the Buena Vista stack, is now superintendent of the Iron Gate stack. The trade name, "Alleghany," for the pig iron, which is basic, foundry and special car wheel pig, is still retained. Rogers, Brown & Co. are selling agents as they have been for this product in the past.

The Alleghany Ore & Iron Co., whose properties have been leased by the Oriskany corporation, has northern corporation connections in that the controlling interest in the Alleghany company is owned by the Lukens Iron & Steel Co., Coatesville, Pa. The Alleghany company, together with the Empire Steel & Iron Co., jointly control the Victoria Coal & Coke Co., operating coal mines and coke ovens in West Virginia. The Alleghany company owns and operates the Oriskany brown hematite steam shovel iron ore mine at Oriskany and at Lignite, Va., and the Reid mine at Oriskany, and it also leases on a royalty basis the Dixie ore mine at Vesuvius, Va., the combined annual capacity of these mines being about 132,000 gross tons. The Alleghany company operated on lease on the royalty basis the limestone quarry at Bells Valley, Rockbridge county, Va., with an annual capacity of about 25,000 tons.

## TALK FREIGHT RATES.

**Fitchburg Manufacturers Investigate Rates to South and West.**

Boston, July 11.—Iron and steel manufacturers at Fitchburg held their annual outing Thursday at Whalom, at the summer residence of Robert D. Gould, of the Fitchburg branch of the National Metal Trades Association. A large number of manufacturers were present from other places in Worcester county, Boston, Lowell, and other eastern Massachusetts cities.

Freight rates was the topic of after-dinner discussion, and a committee was appointed to investigate the rates to the south and west and confer with railroad officials on the subject. Among the speakers were Frederick Fosdick, Charles Fosdick, John W. Harrington of Worcester, Edwin E. Bartlett of Boston, Daniel Simonds, Mr. Gould and others.

**Additional Signatures.**—A number of additional companies, during the past week, signed the sheet and tin plate scales recently adopted at the conference between the American Sheet & Tin Plate Co. and the Amalgamated Association of Iron, Steel & Tin Workers. These were as follows: Tyler Tube & Pipe Co., Washington, Pa.; Carnahan Tin Plate & Sheet Co., Canton, O.; Westerman & Co., Lockport, N. Y.; N. & G. Taylor Co., Cumberland, Md.; Atlanta Tin Plate & Sheet Mill, Atlanta, Ind.; and Newport Rolling Mill Co., Newport, Ky.

The books of the American Steel Foundries closed July 15 for the transfer of the common and preferred stock and the deposit certificates issued by the Guaranty Trust Co., of New York City in accordance with the plan for re-organization. The exchange ratio is: Each share of preferred stock is entitled to $77 par of new stock, $20 par in four per cent debentures and $3 cash, while common stock is entitled to $25 par in new stock. Scrip will be issued for fractional shares of stock and debentures.

No. 3 stack of the Newburg, O., blast furnace plant of the American Steel & Wire Co., was blown in July 11.

## FABRICATORS OBJECT

**Strongly to Steel Makers Competing on Erecting Work.**

A meeting of a number of representatives of bridge and structural steel fabricating concerns was held at the Hotel Henry, Pittsburg, July 10, for the purpose of arranging of more united action on matters of common interest and for the purpose of taking up several grievances for which it is claimed certain steel companies are responsible. Eugene Runyan, of the Central States Bridge Co., Cincinnati, who acted as chairman of the meeting, will appoint a committee to wait upon the steel companies in question with the request that the latter discontinue entering into competition with the fabricators in merchandising structural shapes, unless upon an equal basis, and that no discrimination be shown in the prices of structural material from the mills.

## INSPECT SANITARY MANUFACTURING CO.'S PLANT.

Arrangements have been completed by the Engineers' Society of Western Pennsylvania for an inspection trip to the extensive works of the United States Sanitary Mfg. Co. at Monaca, Pa., Tuesday, July 21. This excursion will afford the members of the society and their friends an excellent opportunity to witness the many interesting operations in connection with the manufacture of enameled iron baths and plumbing goods, including the pattern making, melting, mixing and handling of metals, molding large, intricate and extremely thin castings, cleaning, enameling, painting and decorating. The excursion train will leave the P. & L. E. R. R. station, Pittsburg, at 1:35 P. M., and the returning train will arrive in Pittsburg at 5:15 P. M. The entertainment committee having the excursion in charge consists of S. P. Grace, chairman, S. Stucki, Geo. T. Barnsley and Richard Hirsch, secretary.

**Build Employes' Houses.**—The H. C. Frick Coke Co., Pittsburg, has awarded the contract to the Nicola Building Co. of Pittsburg, for the construction of 90 double frame houses for the accommodation of 180 families. This is part of the work outlined by the coke company in connection with its large new plant now being built in Fayette county near the Monongahela river. The dwellings are to be completed sometime this fall.

The Belfont furnace of the Belfont Iron Works, Ironton, O., was blown out July 14, for repairs.

## RAILROAD ACTIVITY

**In Shops and Market Brings Encouragement to Canada.**

Toronto, Canada, July 10.—A hopeful sign of the gradual improvement of conditions in the iron and steel trade is the revival of activity in connection with railroad equipment. In view of the requirements for moving the western crops the railroads are strengthening their mechanical departments and rushing work. At the Angus workshops of the Canadian Pacific railway, in Montreal, several hundred workmen have been taken on and further additions to the force are to be made. At the C. P. R. shops in Winnipeg, where for the past six months the men have only been working 40 hours per week, the full time of 50 hours per week has been resumed and owing to the large quantity of work on hand, night shifts are likely to be put on. The Canadian Car Co., Montreal, is turning out about 20 new freight cars per day for the Grand Trunk Pacific. The Grand Trunk shops at Montreal have been working almost steadily during the summer, and have turned out a large amount of new rolling stock in addition to extensive repairs, and have also a great deal of work on hand to get their rolling stock in readiness for the fall traffic. At the Grand Trunk shops in London, Ont., the force has been increased by 50 men and the hours of labor increased from 45 to 50 per week.

J. H. Plummer, president of the Dominion Iron & Steel Co., of Sydney, N. S., sailed July 9 for England in connection with the financial reorganization of the company as authorized at the recent meeting of shareholders. The company's output for June was as follows: Pig iron, 21,180 tons; steel ingots, 20,280 tons; blooms, 20,490 tons; rails, 14,220 tons; and rods, 3,310 tons.

## SHOPS GET BUSY.

**From All Over Indiana Come Reports of Plant Resumptions.**

Indianapolis, July 13.—The first day of July was observed so far as possible as "Re-employment Day" in Indiana, and it is estimated that fully 4,000 men returned to work on that day. At the Indiana Steel & Wire Co.'s mill at Muncie 400 men were given employment after a shutdown due to machinery repairs; at Wabash the shops of the Big Four railroad resumed with several hundred employes on a seven-hour schedule. In Newcastle the Indiana Rolling Mill Co., the Maxwell-Brisco Motor Co., and the Pan American Bridge Co. are all operating with full forces; the C., C. & L. shops at Richmond are employing more men than ever before; at Princeton 50 more men have been given employment during the last week. in the Southern railway shops. The Louisville & Nashville shops at Howell are also running on practically full time with 1,500 employes after having run four days a week for some time.

The Newcastle Foundry Co. is now running both day and night forces and is also building a substantial addition that will permit the employment of a larger force when completed.

**Schwab Makes Denial.**—Charles M. Schwab denies that the foreign trip from which he has just returned was in any way identified with the formation of an international steel combination. Of the present situation he says:

Steel conditions look much better and the outlook is more encouraging than at any time since the depression started. I look for a gradual improvement, but no sensational upturn for the better. A gradual and steady improvement would be much better for the industry and would impart more stability to the trade than a rapid restoration. The reports I get from the Bethlehem Steel Corporation are very encouraging, showing a satisfactory improvement over the past 10 days or two weeks. I do not anticipate any changes in steel prices in the near future.

**Movement to Foreclose.**—William D. Blauvelt, as trustee for the bondholders of the Passaic Steel Co., has been granted permission by the United States Circuit Court at Trenton, N. J., to institute forclosure proceedings on the mortgage for $2,500,000 against that company, the receivers of which will be made defendants in the action. Arguments will be heard later on an application to have the present receivers supplanted by others.

The second annual outing of the general offices of the Carnegie Steel Co. at Pittsburg will take place at Rock Point Park near Ellwood City, Pa., July 25. Special trains will convey the picnicers to their destination, where, following a general basket luncheon, a program of athletic sports and other amusements will be carried out.

The Erie railroad has invited bids for the construction of 15 locomotives.

## PERSONALS.

H. F. Martin, general manager of sales for the Pennsylvania Steel Co., Steelton, Pa., has sailed for a brief European trip.

Noah H. Swayne, 2nd, the Philadelphia representative of Rogers, Brown & Co., sailed last Sunday for Europe, from which he will return late in August.

W. C. Runyon, president of the Struthers Furnace Co., sailed from New York, July 8, for a two months' tour of Europe.

Former Governor John W. Griggs, of New Jersey, has been elected a director of the American Locomotive Co., succeeding S. L. Schoonmaker, resigned. Mr. Griggs has been a director of the Rogers Locomotive Co. for years.

Edgar S. Cooke, president of the Warwick Iron & Steel Co., is planning a trip to London, Eng.

Thomas H. Simpson, president of the Michigan Malleable Iron Works, Detroit, sailed for Europe on the steamship Baltic, July 9.

W. R. McKeen has resigned the superintendency of motive power and machinery of the Union Pacific Railroad Co., to assume the management for E. H. Harriman of the McKeen Motor Car Shops to be established at Omaha.

## OBITUARIES.

Thomas J. McCormick, aged 58 years, died at his home in Braddock, Pa., July 12. At the time of his death he was superintendent of the stock yards of the Carrie blast furnaces of the Carnegie Steel Co. At one time he was superintendent of the plants of the H. C. Frick Coke Co. and the John M. Schoonmaker Coke Co., Connellsville, Pa.

William F. Niedringhaus, aged 73 years, one of the very first manufacturers on a large scale of tin plate in the United States, died on the afternoon of July 14 at his home 5105 Landell Boulevard, St. Louis. He had been in failing health for four weeks. Mr. Niedringhaus was a director of the National Enameling & Stamping Co., a leading churchman and philanthropist of St. Louis.

William J. Nesbit, aged 79 years, who built a number of rolling mills and plants of all kinds in the Wheeling, W. Va., district, died at Wheeling July 6 from injuries sustained in a fall. Some of his principal achievements were the construction of the Benwood mills and the Aetna Standard works at Martins Ferry, O.

### IMPROVING WATER SUPPLY FOR TENNESSEE PLANT AT ENSLEY, ALA.

Among the many improvements that are being made by the Tennessee Coal, Iron & Railroad Co., at Ensley, Ala., plant since passing into the hands of the United States Steel Corporation, is one providing for a supply of soft, clear water for boiler feed. A contract has just been entered into with Wm. B. Scaife & Sons Co., Pittsburg, to remodel the Tennessee company's present water softening and purifying system and convert it into a We-Fu-Go system, intermittent type, with a capacity for 35,000 horsepower of boilers. Wm. B. Scaife & Sons Co., in installing the We-Fu-Go system, intermittent type, will discard all apparatus except four large tanks in use with the present system, and after it completes the work, the system will consist essentially of eight large treating and settling tanks equipped with patented mechanical stirring devices, and eight large patented mechanical gravity filters. The filters will be installed in a building, and in the same building will be located all the valves, etc., for operating the system. The arrangement of the piping will be such that any or all of the treating tanks can supply water to any or all of the filters. When the Scaife & Sons Co. completes its contract, this installation, having a capacity of 3,360,000 gallons of water per 24 hours, will be the largest intermittent type water softening and purifying system in the world.

The water taken from Yellow Creek in its natural condition contains about 15 grains per gallon of scale-forming solids in solution. By means of the improved softening system which is being installed, the scale-forming solids in solution will be reduced to a minimum and the formation of scale in pipe lines, heaters and boilers, will be entirely prevented. This system will be the 32d plant installed for the Steel Corporation by Wm. B. Scaife & Sons Co.; the most recent installation it has completed being a 25,000 horsepower system for the American Steel & Wire Co. at its Newburg works, Cleveland.

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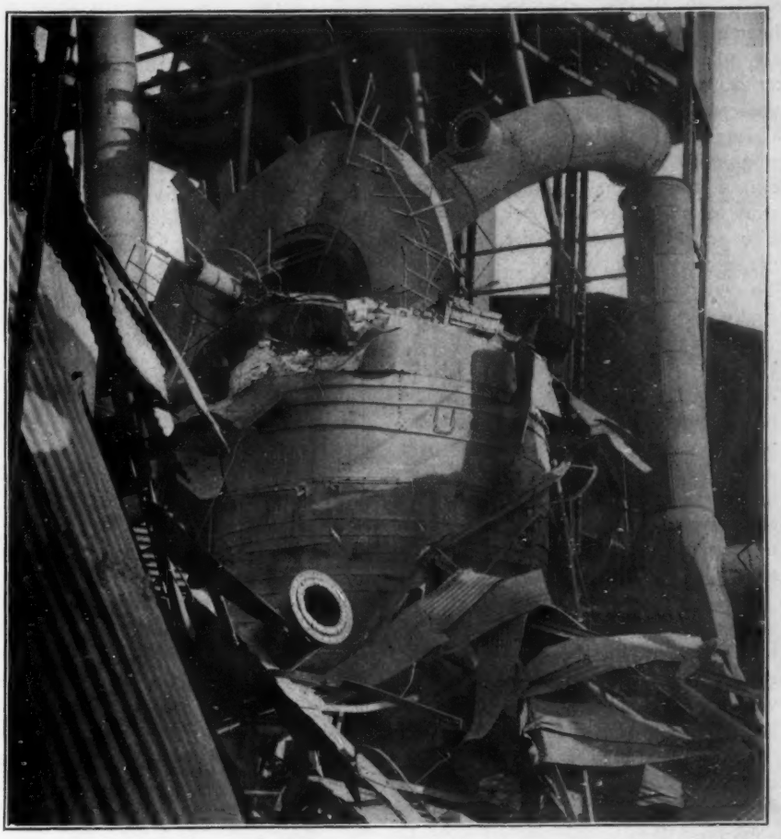
**Metal Trades Outing.**—The Cincinnati branch of the National Metal Trades Association will give its third annual outing to the employes in the shops and their families July 25. The tickets of admission and for all of the amusements will be distributed to the laid-off employes, as well as to those now working. Sixty thousand tickets will be distributed. The association has bought all of the Chester Park privileges for the day and has arranged for a fireworks display in the evening. The committee in charge of the outing includes the following: E. H. Hargrave, of the Cincinnati Tool Co., chairman; P. O. Geier, of the Cincinnati Milling Machine Co.; S. C. Schauer, of the Cincinnati Machine Tool Co.; Robert McGowan, of the McGowan Pump Co.; E. Von Wyck, of the Von Wyck Machine Tool Co.; and John Manley, secretary of the Cincinnati branch.



## WRECK OF WELLINGSTON STACK AFTER SLIP

No more complete wreck of a blast furnace stack could be imagined than that which ended the existence of No. 2 stack of the Wellston, O., furnace of the Wellston Steel & Iron Co., in the Hanging Rock district. The collapse occurred June 1 when a slip rent the jacket and lining almost from hopper to hearth. The stack then seemed simply to crumple up and fall in on itself. The top filler had descended just a short time previous and no lives were lost. The company has not yet decided whether the stack will be torn out and rebuilt.

The wrecked stack was one of two of like size constructed in 1874-5 and remodeled in 1889, when it was equipped with four Thomas stoves. It was 52½ feet high with 13-foot bosh.

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### ROLLING MILL IS PLANNED FOR TOLEDO, O.

Incorporation papers have been sent to the state capital from Toledo, O., for the organization of a rolling mill company, with a proposed capital of $350,000. The company proposes to manufacture refined and common bar iron, and has taken up options to locate in the old Shelby Steel Tube plant on Dorr street. The company is being organized by W. W. Lindsay, of Detroit, who closed options on the ground and buildings. Interested in the project with Mr. Lindsay are George E. McBride, of London, Ont., and J. B. Patterson, Dominion Steel & Iron Co., Toronto.

## MEXICAN STEEL PRODUCTION.

**Large Order For Steel Rails—Increased Imports.**

Mexico City, July 9.—During 1907 the Monterey Iron & Steel Co., Monterey, Mex., produced 17,875 tons of Bessemer steel ingots, and approxmately 35,000 tons of open-hearth steel. Practically the entire open-hearth steel output was consumed by the plate mill, the tonnage of plates aggregating 33,000 tons. The foundry showed a production of 2,400 tons. Owing to the failure of the railroads to provide adequate transportation facilities, the operations during the year were greatly interfered with, and for a considerable period the blast furnaces were compelled to shut down. Th company mined 11,800 tons of coal.

The National Railway has closed a contract with the Monterey Iron & Steel Co. for 20,000 tons of steel rails to be used for extensions and replacements. It is announced that upon the completion of the deal for the merger of the trunk lines, that extensive improvements will be undertaken which will insure the placing of an additional rail tonnage.

From July 1, 1907, to March 1, 1908, the iron and steel imports reached a total value of $18,808,889, and for the corresponding period the year previous, $14,316,269. These figures are based on Mexican currency.

The only iron foundry in Columbia, South American, is at Bogota. It is known as La Paradera and is operated on a small scale, native ores being smelted, the iron being subsequently remelted for casting purposes. There are several commercial iron deposits in the interior of the country, and one ore body located near the coast of the Caribbean sea is now being drilled by American engineers.

## THE PARK DROP FORGE CO.

The Park Drop Forge Co., Cleveland, is now occupying its new plant on East Seventy-ninth street, near Gordon park. The building is a steel frame structure, 200 x 65 feet, of fireproof construction. The walls are built in movable sections, which can be slid up out of the way, thus forming a very cool and pleasant shop on hot days. The plant contains two 15-ton traveling cranes, oil furnaces, Chambersburg steam drops and Waterbury board drops, nine in all. The works also contain a machine shop or die making room, and a special furnace equipped with pyrometers for oil tempering and heat treating. The drops are mounted upon a single monolithic concrete pier, 11 feet deep and 8 feet wide, extending the full length of the building.

**Employes Give Banquet.**—The Central Organization Committee, about 40 men comprising the heads and assistant heads of the various departments of the American Rolling Mill Co., Middletown, O., recently enjoyed their second quarterly banquet. R. B. Carnahan officiated as toastmaster, and remarks in appreciation of the high grade of workmanship of the employes were made by Secretary R. C. Phillips, Superintendent Albrandt and Superintendent J. B. Tytus.

**Steel Tubes Acquiescence.**—The United States treasury department has announced its acquiescence in the court decisions on steel tubes used for conveying gas. The vessels varied in sizes and were assessed with duty at 45 per cent, but the Liquid Carbonic Co., importers, protested, claiming 35 per cent as the proper rate. This contention was sustained and acquiesced in.

A concession has been granted to an American company represented by I. Hughes to establish a plant to cost $500,000 (Mex.) for the manufacture of galvanized iron in either Vera Cruz, Tampico or San Luis Potosi. The company has the right to bring in the raw material free of duty and will buy largely from the United States. The yearly consumption of galvanized iron in the country is about 17,000 tons.

J. C. Maben, president of the Sloss-Sheffield Steel & Iron Co., has returned from a four months' European trip. He says:

"If the consensus of foreign opinion regarding this country's commercial future is correct we are to have a great business revival in the fall. The disposition of European capital toward America has radically changed during the last few months. All is optimism and cheerfulness, where not long ago there was even more apprehension than existed right here. Why, at one time Italy refused to honor American letters of credit, and I believe the same condition existed in France."

New orders of the Bethlehem Steel Corporation in the month of June are announced to be double those received in the month of May.

## FORMAL TRANSFER OF MORGAN SPRING PLANT AT STRUTHERS, O.

The deed conveying the real estate and buildings of the Morgan Spring Co. at Struthers, O., to the Youngstown Sheet & Tube Co. has just been filed with the recorder of Mahoning county. The real estate comprises nearly 1,000 acres of land, with buildings, having a total value of $700,000. With the property deed was filed a mortgage by the Youngstown Sheet & Tube Co. to the Dollar Savings & Trust Co., Youngstown, as trustee, for $700,000 to secure a bond issue of a like amount authorized by the directors of the company to pay for the Struthers plant. The mortgage is dated July 1, 1908, and provides for the issue of 680 bonds of a par value of $1,000 each, and 100 bonds of $100 each, the bonds to bear interest at 6 per cent and planned to mature beginning with July 1, 1913, to run until July 1, 1928.

The International Steam Pump Co., 115 Broadway, New York City, will shortly be in the market for an extensive list of machine tools in connection with improvements at its Snow, Dean and Harrison plants. Although the lists will call for only individual tools, the total expenditure will run close to $100,000. This company is also about to close on a large lot of forgings for gas engines, about $200,000 being involved. Within the last three weeks its pig iron purchases have aggregated about 20,000 tons, practically all of which, it is stated, will be required for orders already booked. Activities are increasing quite appreciably at the big Harrison plant.

Hamilton & Chambers, steel construction engineers and contractors at 29 Broadway, New York City, have issued a neat folder in celebration of the first anniversary of the firm. Fifty-three contracts were completed during the year, and an early extension of facilities is contemplated. The firm has handled a number of export orders.

The Cincinnati section of the American Foundrymen's Association is already making preliminary plans for the entertainment of the national convention of foundrymen to be held in Cincinnati in 1909.

An officer of the Lackawanna Steel Co. is quoted as saying that it is employing from 2,200 to 2,400 men constantly, and that never, since the November shutdown, has its mills

# THE MANUFACTURE AND USE OF FERRO ALLOYS

## A Discussion of the Methods Adopted Abroad in Connection With the Electric Furnace, and Notes on the Properties of the Alloys

By John B. C. Kershaw.[1]

This important electro-metallurgical industry is a growth of the last 10 years, the discovery of the effects produced by small percentages of certain metals upon iron and steel, and of the best methods of manufacturing these alloys, having been largely due to research work carried on since 1895.

Two methods of manufacture are employed: 1. The aluminum reduction process the details of which have been worked out by Goldschmidt, and 2, the electric furnace processes—of which those of Girod, Keller and Heroult are the best known.

The aluminum reduction method of Goldschmidt depends upon the great affinity of aluminum for oxygen. The aluminum acts both as reducing agent and as source of the thermal energy. The oxide of the metal to be reduced is mixed with ferric-oxide and aluminum powder, in proportions calculated according to the character of the alloy desired, and the charge is then fired with a barium oxide cartridge, exactly as in the ordinary use of thermit. If the pure metal is desired, the ferric-oxide is omitted from the charge. The reduction proceeds in the usual way, a slag of molten alumina containing the impurities of the oxide, being formed and floating in the crucible above the molten alloy of iron and the other metal. The advantage of this method of manufacture is the complete absence of carbon from the mixture and therefore from the finished product. The disadvantages are the presence of aluminum or alumina —in small percentages, and the higher cost as compared with the electric furnace method of production. The purpose for which the alloy or metal is required, must therefore settle whether the freedom from carbon is worth the higher cost of manufacture. Dr. Goldschmidt has informed the writer in a recent letter, that the following metals and alloys are being made by the aluminum reduction process. Chromium, manganese, molybdenum—ferro-vanadium, ferro-boron—chromium and molybdenum—ferro-titanium —manganese and titanium—manganese and boron-manganese and copper—manganese and tin.

The application of the aluminum reduction process for the manufacture of these metals and alloys has increased considerably in England, France, Germany and America—but no figures are available showing the output in the various countries. The most important works where this process is carried on, are the Chemische Works & Zinn-Hutte, of Goldschmit & Cie. at Essen in Germany.

The electric furnace methods of producing ferro-alloys are based largely upon the research work of Moissan, carried out in Paris in the years 1890-1895, and recorded in his book, Le Four Electrique.

The oxide or ore of the rarer metal is mixed with ferric oxide and suitable slagging materials, and after the addition of the necessary amount of carbon for reduction purposes, it is heated in an electric furnace of the resistance type, until the reduction of the metals is complete. The metallurgical side of the process is similar to others in which carbon is used as reducing element,—but electric heating is required in order to obtain the high temperature demanded for the reduction of the oxides of the rarer metals.

The furnaces used in the manufacture generally are designed for resistance heating, but combined arc and resistance heating is employed in the earlier stages of the operation. The simplest form of furnace is merely a column of square cross section, lined with suitable refractory material, and provided with two massive carbon electrodes, one fixed in the base of the furnace, and preferably water-cooled, the other suspended in the shaft of the furnace, and movable in either a horizontal or vertical direction. As refractory material the ore or oxide used for the reduction process is most suitable, since this contains only the elements already present in the charge, and by cooling the outside walls of the column and making them of sufficiently wide cross section, sufficient working room is left for the conduct of the reducing and smelting process. The mixture of ore, coke and slagging materials in a finely divided state is charged into the furnace from above, and the molten metal or alloy is tapped periodically at the foot of the shaft.

The modifications of this primary form of furnace designed and used by Heroult, Keller and Girod, will be described later on in the article.

The chief centers of the ferro-alloy industry are in France and Switzerland, many of the water-powers developed and works erected for calcium carbide production in the years 1895-1900, being now devoted to the newer and more profitable manufacture.

In France, the Societe Electrometallurgique Francaise, with works at La Praz and at St. Michel, and Messrs. Keller, Leleaux & Cie with works at Livet and at Kerrousse are the chief producers,while the Societe Anonyme Electrometallurgique Girod utilizes over 25,000 horsepower in the manufacture of ferro-alloys, at three works situated on the borders of France and Switzerland.

In America, the ferro-alloys industry is less developed, and the most important producers are a company which has taken over the old Willson Carbide works at Kanawha Falls, and the Electric Smelting & Aluminum Co. (Cowles Bros.), at Lockport, N. Y.

Other companies producing these alloys are: the Societe la Neo Metallurgie, with works at Notre Dame de Briancon, France; the Bosniche Elektricitats Gesellschaft with works at Jaice, Bosnia; T. Goldschmidt & Co., with works at Essen, Germany, while at Bitterfeld in Germany, Mattrei in Austria, Sarpsborg in Norway, Meran, Lonza and Gampel in Switzerland, some portion of the available power is being devoted to the production of ferro-alloys.

As regards the purity of the ferro-alloys produced, the percentage of carbon has been gradually reduced and the amount of the rarer metal has been increased, as experience has been gained in the conduct of the furnace process. This improvement in the product has of course necessitated

[1]West Lancashire Laboratory, Waterloo, Liverpool, Eng.

the use of purer raw materials, and the low carbon ferro-alloys now manufactured by the electric furnace method are proportionally much higher in price than the high carbon alloys, produced in the early days of the industry and still turned out and sold for special purposes. The alloys are now in fact manufactured and

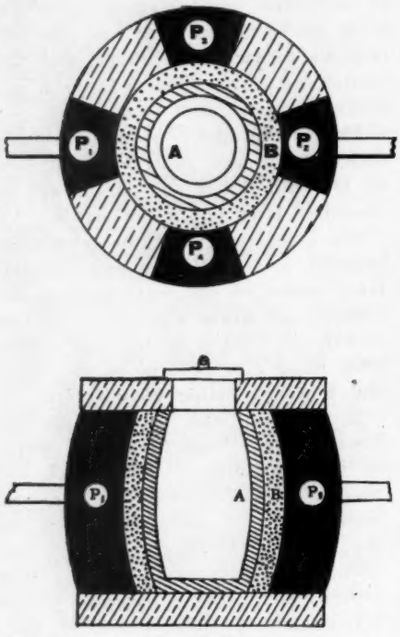


FIG. 1—GIROD LOW TEMPERATURE FURNACE.

sold under various grades. Ferro-chrome, for example, can be obtained containing from 9 per cent down to 1 per cent of carbon, with chromium contents ranging from 25 per cent up to 60 per cent. The following are brief descriptions of the more important works producing ferro-alloys in Europe and America:

**Societe Anonyme Electro-Metallurgique Procedes, Paul Girod.**

The three works operating the Girod furnace and process for ferro-alloys manufacture, are situated at Ugine, Courtepin and Montbovon, on the borders of France and Switzerland, the first named being in France and the other two in Switzerland.

The works at Ugine is the most important, the development of water power here having been commenced in 1903. The waters of the river Arley are impounded by a dam, some distance above the power house, and by means of a pipe line 1,840 feet long and 52 inches diameter, a head of 416 feet is obtained at the turbines. The power house contains 18 units, half of 600 horsepower and half of 300 horsepower capacity, the turbines being of the Neyret-Bremier type. They are direct coupled to the dynamos, 15 of which are wound for direct current supply, and three for alternating current. The furnace house is 400 feet long and adjoins the power house. The works at Montbovon was commenced with 1,000 horsepower in 1899, and now utilize 4,500 horsepower, while the third works at Courtepin was started in 1903 with 1,800 horsepower, and now utilizes 5,000 horsepower.

The annual output of ferro-alloys by the three works according to the latest official figures, is as follows:

Ferro-silicon, 50 per cent, 5,000 tons.
Ferro-silicon, 30 per cent, 1,000 tons.
Ferro-chromium, 2,000 tons first grade 0.45 per cent C.
Ferro-tungsten, 800-900 tons second grade 2.5 per cent C.
Ferro-molybdenum, 50 tons.
Ferro-vanadium, 5 to 10 tons.

The Girod furnace and process yield alloys of very low carbon content, and the production is therefore readily sold to makers of special steels. The company is in fact reported to be the largest producer of ferro-tungsten in the world, and the Sheffield steel makers are stated to be consuming two-thirds of all they produce. The first grade ferro-tungsten produced at Ugine contains 85 per cent tungsten, the second grade 72 per cent.

Two types of furnace are employed at these works according to the degree of heat required in the reduction process. For the lower range of temperature up to 1,500 degrees centigrade, the crucible furnace shown in Fig. 1 is employed. The crucible A is made of some highly refractory material and is surrounded by silicon and graphite in granular form B. Carbon blocks $P_1$ $P_2$ $P_3$ $P_4$, are placed at equal distances around this ring of resistance material, and are separated by insulating blocks to prevent short circuits. The furnace is mounted on trunnions for facilitating discharge, and in order to prevent unequal heating of the crucible, due to the current selecting the shortest path from one electrode to the other, Girod has taken out an additional patent covering the use of ferro-silicon as resistance material in this type of crucible furnace. By making use of different grades of this alloy, different degrees of resistance can be obtained, and in this way the heating effect can be equalized. The furnaces of this type at Ugine each utilize 200 horsepower, and under normal conditions of work produce from 1,000 to 2,000 kilograms of ferro-alloys per day. For temperatures above 1,600 degrees centigrade, the furnace shown in Fig. 2 is employed.

This furnace is cylindrical in shape, and is mounted as before on trunnions. The furnace body is lined with magnesia brick, while the cover is made of silica brick. The bottom of the furnace is formed of a number of water-cooled iron plates, embedded in the brickwork. Each plate is connected with the body of the furnace by canals running through the brickwork, and the electrical connection between these plates and the charge within the furnace, is obtained by filling the canals with molten soft iron just before the furnace is put into use. The upper electrodes are four in number and consist of massive carbon blocks suspended with their lower ends in contact with the raw materials, or with the slag covering the molten metal. These carbon blocks are connected in parallel to one pole of the supply main, while the sole-plates of the furnace are connected to the other. Alternating current is employed with this type of furnace, since direct current might produce electrolytic action in the molten charge.

**Le Compagnie Electrothermique Keller, Leleux & Cie.**

This company operates the Keller furnace and process at Livet and Kerrouse, Isere, France. The Livet works is the larger of the two, and draws its power from the river Romanche by means of a dam and an underground tunnel 1½ miles in length. A head of 200 feet is ob-

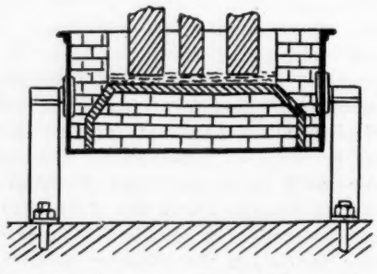

FIG. 2—GIROD HIGH TEMPERATURE FURNACE.

tained at the power house where two sets of generating units are installed—one set generating at high pressure for transmission to the town of Grenoble, and the other set generating at low pressure for use in the metallurgical works. The last named set comprise five Neyret-Bremier turbines, each of 1,200 horsepower capacity, direct coupled to monophase Thury dynamos.

The furnace room which adjoins the power house, contains six furnaces, each of 1,200 horsepower, supplied with current by the low pressure generators, and three furnaces, each rated at 1,500 kilowatts taking current from the high pressure units. The maximum daily output of ferro-alloys when all the furnaces are working is 45 tons, equivalent to 15,000 tons per year.

Fig. 3 is a sectional elevation of the Keller furnace. The furnace is of the resistance type, and consists of two vertical iron-cased shafts A and B, connected below by a horizontal canal C. The shafts are lined with burnt dolomite and tar, and each is provided with a massive carbon block electrode D slung in chains, and movable either in horizontal or vertical direction. The base of each shaft is also provided with a fixed carbon electrode E, connected externally to the other base electrode by thick copper bars F.

The vertical electrodes hang for two-thirds of their length within the shaft. When starting the furnace the charge of ore, coke and slagging materials is placed in each shaft to a depth of 18 inches, the movable electrode is brought down upon it, and the preliminary heating occurs by combined arc and resistance heating, the current passing from one shaft to the other by the external copper conductors. When this stage is over, and the charge has been sufficiently heated to cause reduction of the ore and to produce molten metal, which runs into and fills the lateral canal C D, the current passes from one electrode to the other entirely through the charge within the furnace, and the external conductor F. only comes into operation if any stoppage occurs. As the charge sinks in each shaft, fresh raw materials are added from above, and the electrodes are raised from time to time so that their lower ends do not come into contact with the molten metal collecting on the sole plate of the furnace. The removal of temporary blocks due to cooling is provided for by the use of the secondary electrode shown at G. The vertical electrodes of this furnace are each formed of four carbons of square cross section, each 34 inches square by 56 inches long. The amount of electrode carbon consumed is stated to be small, the average being about 1 inch of length per day.

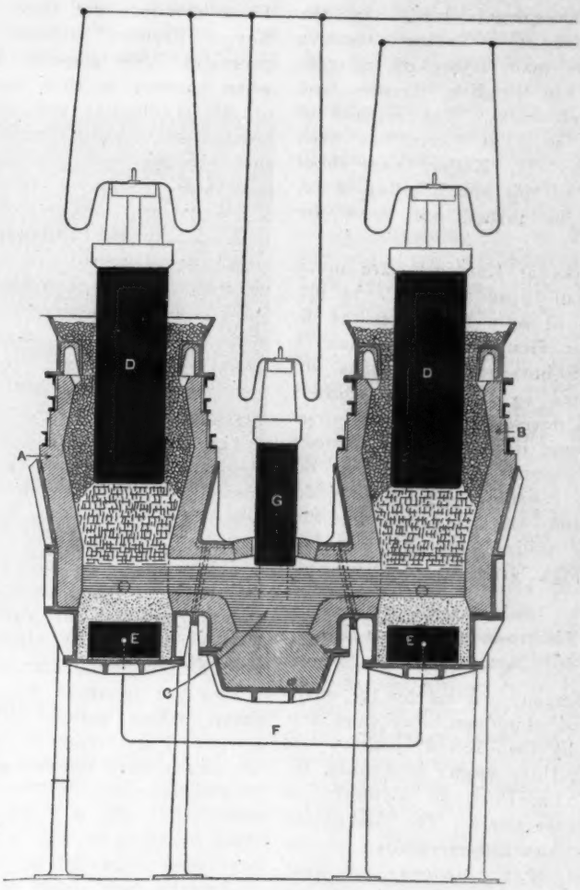


FIG. 3—SECTIONAL ELEVATION OF KELLER FURNACE.

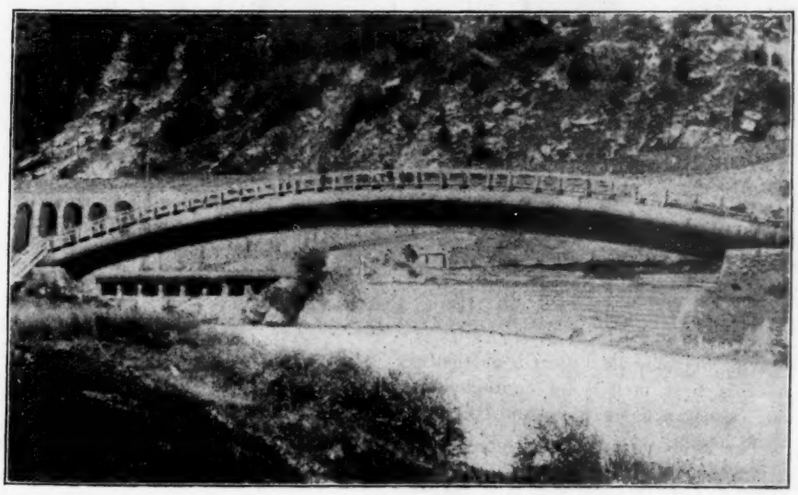

FIG. 4—PIPE LINE OVER RIVER ARC, AT LA PRAZ.

At this works, ferro-silicon, ferro-chrome, ferro-tungsten and electro-silico-spiegel (an alloy containing iron, silicon and manganese) are the chief products. Ferro-silicon is the most important, being manufactured in several grades ranging from 25 per cent up to 75 per cent silicon at the rate of 6,000 tons per year. Ferro-chrome is produced at the rate of 1,200 tons per year, in three grades containing 60 to 65 per cent chromium and 5 per cent, 7 per cent or 9 per cent of carbon. Ferro-tungsten is produced only in small amounts testing 75 to 80 per cent of tungsten and 1 per cent of carbon. Electro-silico-spiegel is obtained by heating together ferro-silicon, flint, carbon and the manganese ore, to a temperature below the volatilization point of man-

ganese. The product contains 22 to 24 per cent silicon and 35 to 40 per cent of manganese; and since it is about double the strength of the ordinary silico-spiegel made in the blast furnace, it is finding extensive use for the manufacture of manganese steels, in English, German and Italian steel works. The method of production used at Livet has been patented by M. Keller, and about 5,400 tons of this special alloy is reported to be turned out there per year.

The works at Kerrousse are much smaller than those at Livet and utilize a fall of only 8 feet on the R. Blavet near Heunebont, Morbihan.

Four 150-horsepower turbines direct coupled to two 300-horsepower alternators, developing about 600 horsepower, being installed. The furnace plant corresponds to this power, being of the resistance type already described, and the furnaces in this works are utilized for the manufacture of high grade ferro-silicon exclusively.

### Societe Electro-metallurgique Francaise.

This company carries on the manufacture of aluminum, steel and ferro-alloys by the Heroult process and furnace at three works in France, located at La Praz, St. Michel and Froges, respectively. The first named works is devoted specially to the production of ferro-alloys and steel, and is situated close to the Italian border, in one of the most mountainous districts of Savoy. The necessary power is obtained from the river Arc, by means of two dams constructed across the river bed at points some distance above the power house. The water is led to the works by canals and pipe lines of the usual type, but the method employed to carry the larger pipe line (8 feet diameter) over the river Arc, is original and striking, and is shown in Fig. 4. This method was designed by Heroult and has been found quite efficient, all expansion troubles being avoided by the natural spring of the arch. The heads of water obtained at the power house are 105 feet and 238 feet respectively. The flow varies greatly as the river is merely a mountain torrent. In times of maximum flood, the La Praz works has 1,400 horsepower available, and generating machinery equivalent to 10,000 horsepower has been installed.

The turbine house is a long narrow building 430 feet in length, containing 32 generating units of various dates and sizes. The most remarkable machines are the oldest, namely, two 350-horsepower unipolar dynamos—built by the Compagnie de l'Industrie Electrique of Geneva. These dynamos are direct coupled to Neyret Bremier turbines, and each generates 7,500 amperes at 35 volts when running at their normal speed of 300 revolutions per minute. The absence of sparking troubles due to their having no commutators is a noticeable feature of these machines.

Twenty-one six-pole Thury dynamos, each of 440 horsepower capacity, supply continuous current for the electro-metallurgical works. Each of these machines under normal conditions delivers 3,000 amperes at 110 volts. Three smaller Thury machines supply current for lighting and motive power purposes.

The Heroult form of furnace is shown in cross section in Fig. 5. It consists of a shallow iron tank, lined with dolomite brick and provided with magnesite brick around the openings. The furnace is closed in above by an arch, and is curved at the bottom and mounted on cogged bars, which render tipping for discharge possible. The carbon electrodes are mounted on a supporting frame which permits either vertical or lateral movement of the electrodes, by means of a suitable gearing. The charge of materials placed in the furnace is first melted by combined arc and resistance heating—and the further heating of the charge is then carried on by resistance heating alone. The two carbons are allowed to dip slightly under the slag which forms above the molten metal, and the current then passes from one electrode to the other, entirely through the molten contents of the furnace. For the manufacture of ferro-chrome the furnace is lined with chrome ore, and the two carbons are manipulated so that their lower ends just dip into the slag which covers the molten ferro-alloy. By careful work the amount of carbon present in the final product can be kept down to 2 per cent—and by use of an excess of chromite in the slag the carbon can be still further reduced to under 1 per cent.

The soft alloy produced in this way, is white in color and is not brittle although it possesses a crystalline fraction. The hard alloy generally produced by the electric furnace method of manufacture contains up to 9 per cent and 10 per cent of carbon, and is useless for many purposes to which the soft alloy can be applied. An average quality ferro-chrome contains from 40 to 50 per cent of chromium and from 2 per cent to 6 per cent of carbon.

No figures are available for publication relating to the output of ferro-chrome by the La Praz works, but as this was one of the first works to take up the manufacture in France, it has no doubt been turned out at times in large quantities according to the fluctuation in demand and price. Fig. 6 is a general view of the La Praz works.

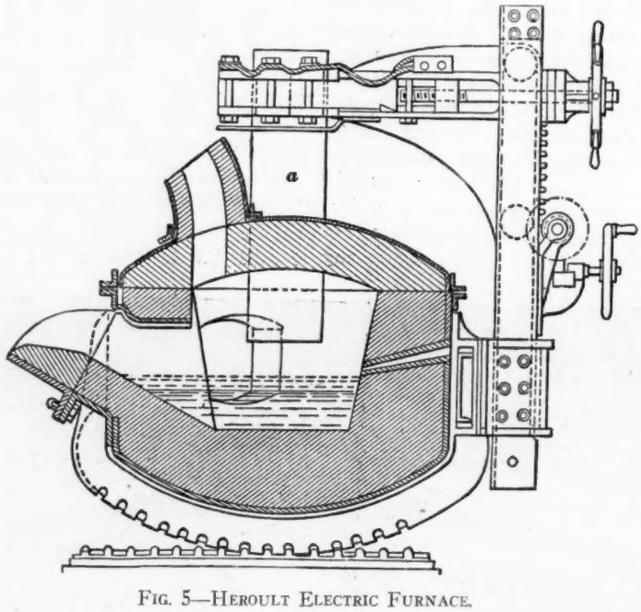


FIG. 5—HEROULT ELECTRIC FURNACE.

### The Electro-metallurgical Co. of the United States.

This company has been formed quite recently in New York to take

over and operate the old established Willson works at Kanawha Falls, in Virginia, where calcium carbide was at one time produced.

The generating plant at this works comprises three 800-kilowatt units, each generating 7,000 amperes at 110 volts. Seven furnaces of the Willson crucible type are installed in the furnace house and the maximum output is stated to be 200 tons of ferro-alloys (chiefly ferro-chrome) per month, or 2,400 tons per year. The ferro-chrome produced here tests 70 per cent chrome, 24 per cent iron, and 5 to 6 per cent carbon.

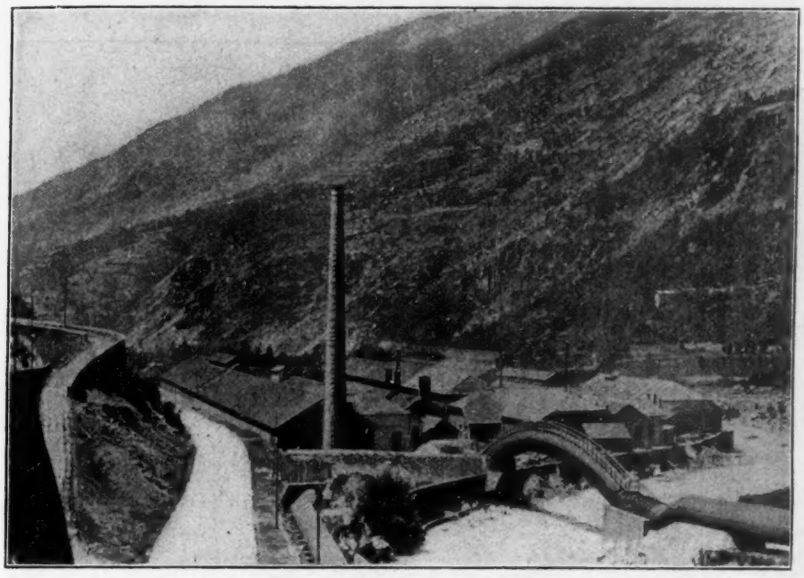

FIG. 6—GENERAL VIEW OF LA PRAZ WORKS.

### Utilization.

Special steels are classified according to the number of elements (other than impurities) that are contained in them, and are known as "binary," "ternary" and "quaternary" steels. A steel containing only iron and carbon is a binary steel; a steel containing iron, carbon and nickel is a ternary steel; while a steel containing iron, carbon, nickel and vanadium is called a quaternary steel. It is the ternary and quaternary steels which have become of very great importance in recent years, owing to the valuable physical properties which they have been found to possess. In the following notes the general effect upon steel of the alloys made in the electric furnace is described briefly. The subject is one however upon which an immense amount of research work is being done, and no attempt can be made to cover this side of the subject fully in the present article. As regards the methods of work, it has been discovered by experimental trials that the steels produced with ferro-alloys are more homogeneous and yield more reliable castings and forgings than steels produced from the pure metals, this difference being due to the greater difficulty of securing the solution and diffusion of the added metal in the latter case. The melting points of some of these rarer metals is extremely high, and a temperature above that attained in the ordinary process of steel casting is required, to produce a thorough diffusion of the added metal through the mass of the steel to which it is added.

When used in the form of a ferro-alloy produced by electric furnace methods this difficulty is not met with, since the alloys melt at a lower temperature than the rarer metal alone, and also diffuse rapidly through the mass, when added to a crucible or ladle of molten steel.

The most striking results as regards increased tensile strength and resistance to shock have been obtained from the low carbon quaternary steels containing nickel as third element, with chromium, manganese, tungsten or vanadium as fourth element.

The following are notes upon the general use of the ferro-alloys, the manufacture of which has been described in the first portion of this article.

### Ferro-Chrome.

Ferro-chrome is used largely in the manufacture of the special steels used for armor plates, guns, tools and cutlery. It is also employed in the production of steel intended for high speed projectiles. The low grade alloys (high in carbon) may be used for ordinary purposes, but for certain castings the high grade alloy, containing 1 per cent or under of carbon must be employed. Guillet divides chrome steels into three classes with 7 per cent and 22 per cent chromium as their dividing lines. The steels containing up to 7 per cent chromium are very hard and have a high resistance to shock, while class II containing from 7 per cent to 22 per cent chromium show medium tests both for tensile strength and resistance to shock. The steels in class III, containing over 22 per cent of chromium are brittle and are of little practical value. Chromium is generally used with nickel for gun steel, the percentage varying from 1 per cent up to 1.75 per cent. The manufacture demands great care, since slight alterations in the percentage of chromium, or of the temperature at which the steel is worked, produce great differences in the physical properties of the finished steel. The alloy used must be free from manganese, but slight traces of molybdenum (up to 0.05 per cent) are stated to be beneficial to the finished steel.

### Ferro-Silicon.

The ordinary ferro-silicon, containing up to 20 per cent silicon, had been made for years by the usual metallurgical methods, before the introduction of the electric furnace into this branch of metallurgy placed a rich alloy, containing from 50 per cent to 80 per cent silicon on the market. This high grade product has now almost entirely displaced the low grade alloy in iron and steel works, since by its use, the required amount of silicon can be introduced into the finished metal without the danger of introducing other impurities. The percentage of silicon in cast iron is the chief factor in determining its hardness, and therefore this can now be varied at will, in casting metal from the same cupola, by adding the high grade ferro-silicon in calculated amounts, to the metal contained in the ladle or crucible just before casting.

Silicon also combines with the oxygen and other free gases retained in the metal, and therefore serves as a scavenger. The silicon in cast iron usually varies from 1 per cent up to 2.75 per cent.

**Ferro-Tungsten.**

Ferro-tungsten, in conjunction with chromium and manganese, is employed for the manufacture of the high speed tool steels, which have come into great prominence lately owing to the remarkable results first obtained with them by Messrs. Taylor and White of the Bethlehem Steel Co.

The alloy is also used in conjunction with nickel for the manufacture of the hard steels used for gun shields. It is stated that the Sheffield (England) steel makers are now employing two-thirds of all the ferro-tungsten produced; and that the manufacture of the special tool steels is rapidly extending. The amount of tungsten in the finished steel varies from 1 up to 18 per cent, and the following analysis is given by Taylor in his remarkable paper on "The Art of Cutting Metals"[2] of the best modern high speed tool steel:

| | Per cent. |
|---|---|
| Tungsten | 18.90 |
| Manganese | 0.11 |
| Chromium | 5.47 |
| Vanadium | 0.29 |
| Carbon | 0.67 |
| Silicon | 0.043 |

**Ferro-Vanadium.**

Vanadium in small amounts is now being used in steels designed for the axles and cranks of motor cars and for guns and for high speed tool steels, since even 0.10 per cent of vanadium in a ternary or quaternary steel is found to greatly increase its resistance to tensile strain and to shock. Nickel vanadium and chrome vanadium steels have been manufactured by Messrs. Willans & Robinson at their Queensferry works, the percentage of vanadium varying from 0.10 per cent to 0.80 per cent. The following is a test of chrome-vanadium gun steel made by this firm:

| | Per cent. |
|---|---|
| Chromium | 1.267 |
| Vanadium | 0.187 |
| Manganese | 0.47 |
| Silicon | 0.065 |
| Carbon | 0.38 |

The breaking strain of this steel was 53 tons per square inch.

A nickel-vanadium steel has however been produced by Messrs. Willans & Robinson which resisted a breaking strain of over 80 tons per square inch, and had the resistance to the impact test been higher, this steel would have been one of the most remarkable and valuable ever made.

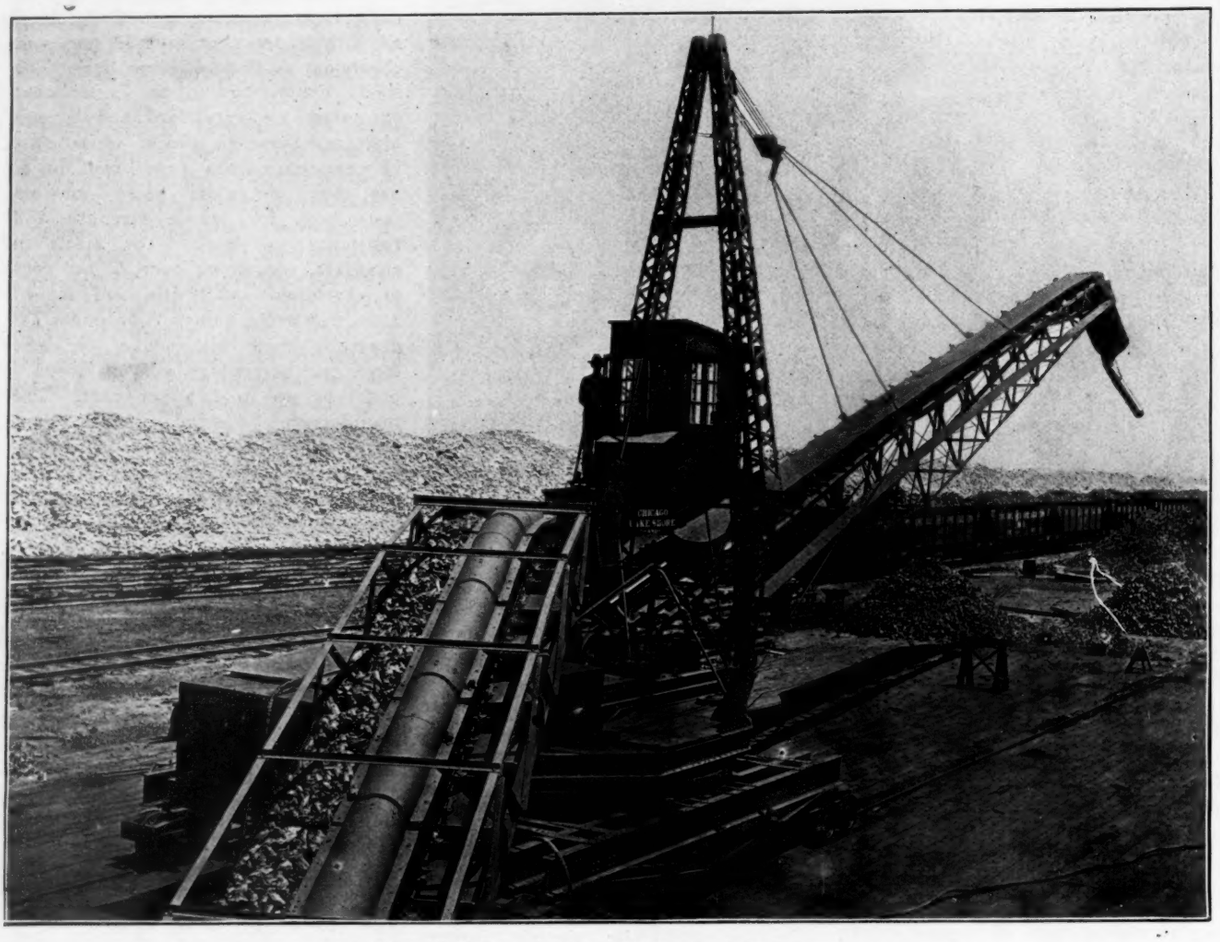

FIG. 1—HAMILTON COAL UNLOADING MACHINE.

The chrome-vanadium steels, however, are at the present time of the higher importance to tool and gun makers.

**Ferro-Molybdenum.**

This is an alloy upon the value of which steel makers are not yet agreed. According to some authorities, molybdenum in small amounts, increases the elastic limit of steel, and it is therefore being employed by some steel makers for the steel intended for use in propeller shafts and blades, and for forgings of a similar character.

In conjunction with chromium it is being used for armor piercing shells, and for high speed tool steels, since the chromium-molybdenum steel is

[2] THE IRON TRADE REVIEW, April 4, 1907.

said to possess hardness and toughness to a high degree.

Ferro-molybdenum is therefore a potential rival of ferro-tungsten, but it has not yet gained the confidence of steel makers, and its use in the steel industry is at the present time very limited.

The following are recent valuable papers and articles dealing with this highly important subject:

1. "The Art of Cutting Metals," by F. W. Taylor. Presidential address to the American Society of Mechanical Engineers, 1906. The latter portion of this address deals with the composition of tool steels, and will be found reprinted in the issues of THE IRON TRADE REVIEW, January to April, 1907.
2. "Notes on Metals and Their Ferro-Alloys," by Dr. O. J. Steinhart. A paper read before the British Institute of Mining and Metallurgy, January 18, 1906.
3. "Vanadium as a Steel-Making Element," by J. Kent-Smith. A paper read before the Liverpool Section of the Society of Chemical Industry, March 14, 1906.
4. "Gun-Steel," by a military correspondent the *London Times*, English supplement, May 22, 1907.

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The Southern Pacific Railway Co.'s shops between New Orleans and San Francisco have been placed on a six-day weekly working schedule, July 3.

## A RECORD PERFORMANCE IN COKE LOADING.

In THE IRON TRADE REVIEW of Sept. 5, 1907, was described a coke loading and unloading machine manufactured by the Hamilton Mfg. Co., Columbus, O. This machine represented an innovation in devices for handling material in that it is a moving system of conveyors operating on its own track which is centrally located on a storage platform.

The accompanying illustrations show the plant of the Illinois Steel Co. at Stockton, Ind. Upwards of 100,000 tons of coke are stored at this point, which are being loaded and unloaded by this machine without breakage. A recent performance of this machine comprised the loading of 24 cars with a total of 732 tons of coke, in a running time of 288 minutes. This is at the average rate of 2.5 tons per minute. The average number of tons per car was 30.5 and the best performance in this loading of cars comprised the loading of 66,500 pounds in 11 minutes, or about 3 tons of coke per minute. The machine is operated by three men, one operator and two laborers, and the labor cost per ton on the above coke amounted to $7, making a cost per ton for handling of less than one cent per ton. As there is no investment in equipment aside from the machine itself and the track on which it runs, and a trestle at the side of the yard, it can be seen that this coke was handled at an extremely low figure. With a machine of this character in use, the extension of a track or trestle is all that is required when additional storage capacity is called for, since the machine moves as it builds or reloads the pile all along the length of the platform.

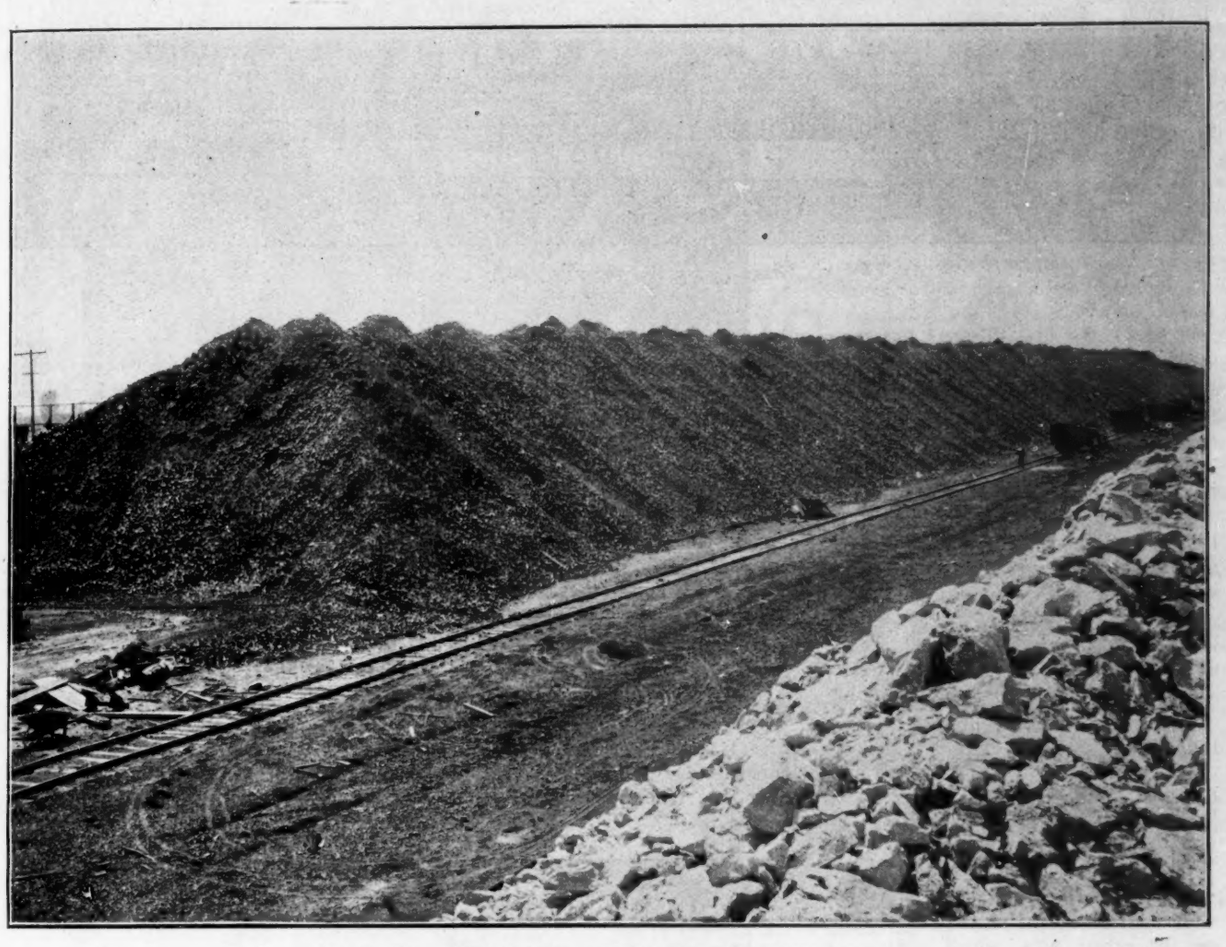

FIG. 2—COKE PILE STOCKED BY HAMILTON COKE UNLOADER.

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The Mohawk machine shop, Fonda, N. Y., writes concerning its recent incorporation that business will be confined to general custom machine work, and it will probably not engage in manufacturing at this time.

## PENNSYLVANIA RAILROAD STEEL COACH.

From designs prepared by the Pennsylvania Railroad Co., the Pressed Steel Car Co., Pittsburg, is now building 85 of the first all-steel passenger coaches constructed for an American railway. These cars are non-combustible, no inflammable material being used, except for the window sashes and seat arm rests, which are of mahogany and represent but 0.002 of the weight of the entire car. The cars have a seating capacity for 88 passengers and weigh complete, including storage batteries for lighting, 113,800 pounds. When the steel cars are loaded to capacity, they will weigh no more per passenger than the modern wooden coaches.

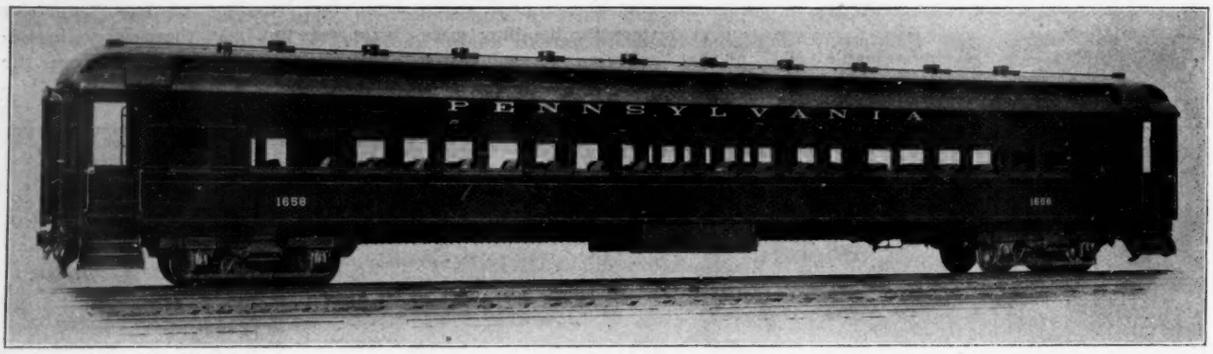
The general dimensions of the car follow:

| | Feet. | Inches |
|---|---|---|
| Length over buffer face plates... | 80 | 3¾ |
| Length over body corner posts... | 70 | 5¾ |
| Length inside ..... | 69 | 7⅜ |
| Width over side sheathing..... | 9 | 9¾ |
| Width inside ..... | 9 | 1⅛ |

The frame is so designed that the whole weight of the car is carried on the center sills, which consist of two rolled channels 18 inches deep, spaced 16 inches apart and tied together at top and bottom with cover plates, ½ x 24 inches. They are of sufficient strength to resist excessive buffing loads. This girder is so set that the buffing and pulling stresses are transmitted in a direct line through the sills. The superstructure is carried by side girders formed of the side sheathing below window sills, with the side sill angle as a bottom chord and the belt rail forming the top chord. No body bolsters are used, the side girder loads being transferred to the center sills through the body and sills and two cross-bearers.

The floor is of "Karbolith," a non-inflammable material, 1½ inches thick, laid on corrugated steel sheets, which are supported at the center sills and side of the car. The sub-floor consists of asbestos board bound with galvanized sheet steel. Composite board, a non-inflammable material, is used for the headlining on the ceiling; the rest of the inside finish is of steel with a layer of 3/16-inch "Ceilinite," glued to the unexposed surfaces. The outside finish, roof covering and steps are of sheet steel varying from No. 16 to No. 11 gage.

Four-wheeled trucks carrying 5 x 9-inch journals of a special construction to accommodate the deep center sills are used. These trucks differ from the usual construction in having the bolsters extended under the side frames, the side bearings located outside of the side frame, and the truck bolsters hung from the side frame by hangers and gibs similar to the arrangement for hanging the side frames of locomotives.

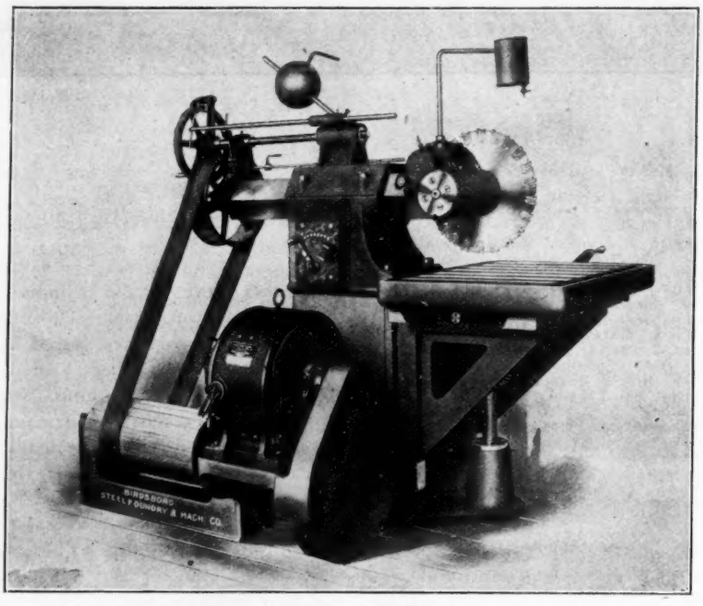



ALL STEEL COACH FOR PENNSYLVANIA RAILROAD.

## THE WAGNER COLD SAW.

The accompanying illustration shows the motor-driven Wagner cold saw, which has been designed with the object of increased production with great ease of control. This machine is manufactured by the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., and is equipped with a Westinghouse type S direct-current, semi-enclosed constant speed motor. The method of mounting makes a compact unit, which can be located at any point in the shop.

The cross feed of the work table, in connection with the vertical movement, enables the work to be brought up to the saw without blocking, except enough to level the casting. The head may be turned through any angle desired, thereby allowing the saw to be used for cutting miters or bevels. The machine is especially designed for small work, such as cutting off sink




THE WAGNER COLD SAW.

heads or risers. Where the degree of hardness of the material to be cut varies considerably, the peripheral speed of the saw must also be varied. The variable speed motors are supplied for this purpose, permitting a reduced speed when operating on high carbon steel. A larger type of saw is manufactured by this company, being built in several sizes up to 50 inches, capable of sawing through a 16-inch bar. The saws are supplied with a motor drive, with a chain or belt connection, or they may be geared, if so desired.

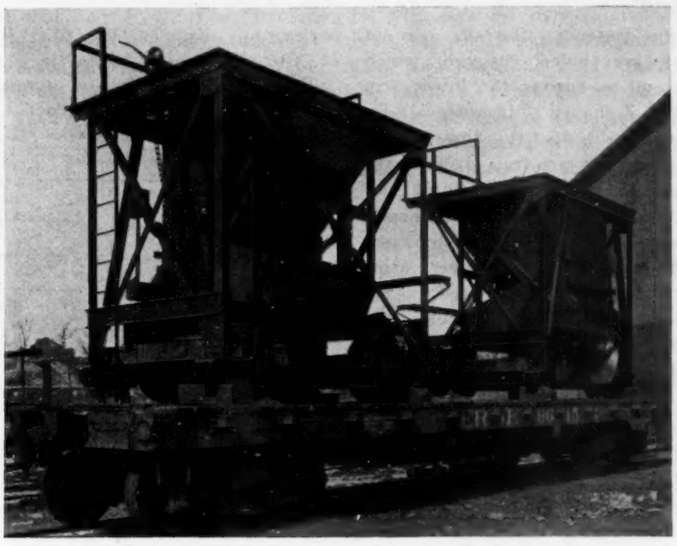


FIG. 1—ORE SCALE CARS FOR CARNEGIE STEEL CO.

## SCALE CARS FOR THE CARNEGIE STEEL CO.

The Youngstown Car & Mfg. Co., Youngstown, O., has recently completed for the Ohio Works of the Carnegie Steel Co. at Youngstown what is probably one of the largest orders ever placed for scale and open-hearth charging cars. Fig. 1 shows the type of ore scale cars which were built. Four of these were furnished and will be used for transferring ore from the bins to the blast furnace skip cars. While in the act of making this transfer, the cars will also automatically weigh the ore.

Each car, which is constructed largely of structural material, has a length over end sills of 11 feet 6 inches and an over all width of 7 feet 6 inches. It has a height to the top of the car proper of 10 feet 9 inches, and is carried on four spring mounted wheels, each 30 inches diameter.

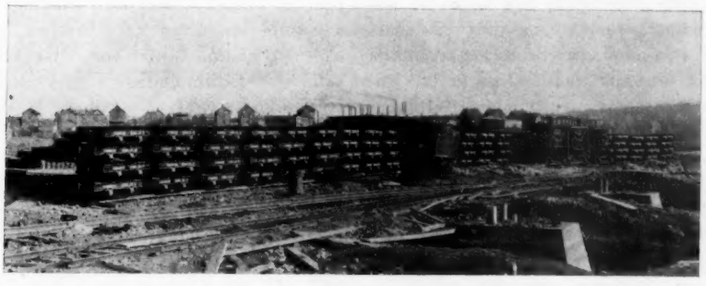


FIG. 3—GENERAL VIEW OF CAR EQUIPMENT FOR CARNEGIE STEEL CO.

The main frame is of 8-inch, 16¼-pound channels excepting the side pieces which are special steel castings. The corner posts are of 4 x 4 x 7/16-inch angles. The bracing is formed of 3 x 3 x ⅜-inch angles. The cars are motor-driven by means of a 25-horsepower General Electric railway motor geared to one axle.

The pocket, which is not the full width of the car, is set at an angle of 45 degrees and discharges directly into the skip car at the furnaces. All corners in the pockets were avoided by the use of filler plates, with a radius of 20 inches, so that the ore will not adhere even if wet. The bottom of the pocket is stiffened by two 6 x ⅝-inch flats. The door at the bottom of the chute is operated by means of a chain belt through a sprocket wheel on the operating platform. The ore is not weighed automatically, but the car is equipped with a Homestead scale, upon which the poise is set, and loading is continued until the beam goes up. The cars were constructed with two right hand and two left hand pockets, and are of standard gage and 10 tons capacity.

The charging box car possesses no unusual features, except that it is built of structural shapes throughout, instead of castings. The general dimensions of this car are:

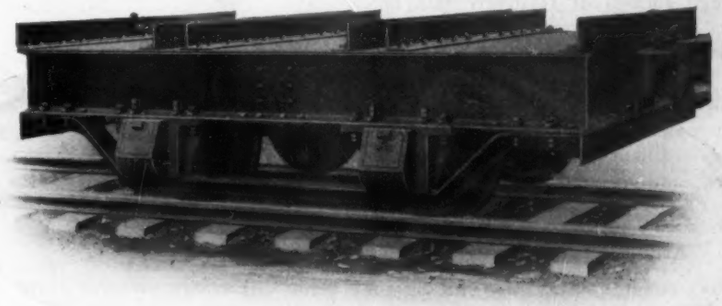


FIG. 2—OPEN-HEARTH CHARGING BOX CAR FOR CARNEGIE STEEL CO.

Length of platform, 8 feet; width of platform, 5 feet ½ inch; width of charging box space, 28 inches; gage of track, 36 inches; wheel diameter, 20 inches; axles, diameter, 4¾ inches; journals, 3¼ x 6½ inches; weight, approximately, 5,000 pounds.

Fig. 3 is a general view of the entire equipment furnished the Ohio Works by the Youngstown Car & Mfg. Co.

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The Star Drill & Machine Co., Portland, Ore., has broken ground for the erection of a machine shop of frame construction, two stories high, to cost $16,000.

# NOVEL DESIGN OF STEEL TIE AND RAILWAY APPLIANCES

In the effort now being made by the engineers of various steel companies and by private inventors to provide the railroads with a substitute for the wooden cross tie which will meet with general approval, some interesting designs of steel ties have been evolved. The Standard Steel Tie Co., Curry building, Pittsburg, has recently presented for the inspection of railway engineering departments, a metal tie and numerous railway appliances which are the inventions of Geo. M. Cote.

This tie is somewhat of a departure from those now on the market. It is formed by pressing a steel plate or skelp into a box form, leaving an open space between the abutting lateral edges of the blank which now form the bottom of the tie. The result is a tie having both downwardly and outwardly flaring sides which, although formed of relatively thin material is said to possess great strength owing to the contour. It is claimed the thrust of the traffic is safely assumed without danger of rupture or flattening, and that the body of the tie is resilient enough to take up the wave motions and vibrations of traffic.

### Arrangement of Fastener.

For street railway use where the tie is embedded under the road surface or paving, the simple form of tie illustrated in Fig. 1, made by bending a flat piece of steel skelp of a thickness of one-eighth inch or more, is recommended. On each side of the point where the rail traverses the tie, a slot is provided through the tie top in which is seated the fastener. To the rear of the slot are holes through which bolts extend to engage the lower arm of the Z-shaped fastener. By tightening the bolts, the lower arms of the fasteners are raised, and the upper arms are correspondingly depressed, thus clamping down firmly the base of the rail. In some cases the bolt holes in the lower arms of the fasteners are threaded, as in Fig. 2, so that machine bolts extending down through the tie are directly threaded to arms of the fasteners.

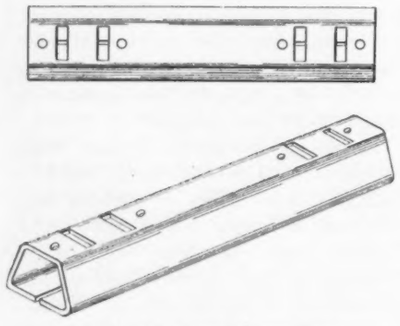

FIG. 1—STANDARD STEEL TIE.

Where the track is subjected to heavy traffic or the fasteners are adjustable to fit varying rail bases or rails shifted in their positions to compensate for wear, it is preferred to do away with the threaded engagement between the securing bolt and the fastener. The hole through the fastener is then unthreaded, and made preferably in the form of a slot or elongated notch in the end of the lower arm of the fastener, as shown in Fig. 3. The bolt is inserted from below passing loosely through the fastener and the tie top, and is fastened with a nut against the top of the tie. This nut can be secured by any form of nut lock desired. By concaving the head of the bolt where it bears against the fastener arm and providing a rounded bearing on the fastener arm to engage the same, a "rocker" engagement resembling a ball and socket joint is provided between the fastener and the bolt head, enabling the bolt to accomodate itself to the varying angles of the fastener arm, caused by the shifting of the rail when the track is regaged, or the vibration of the fastener arm caused by the thrust of traffic against the rail. This arrangement causes the strain upon the bolt to be exerted in a longitudinal direction only, thus preventing any shearing of the bolt or stripping of its threads.

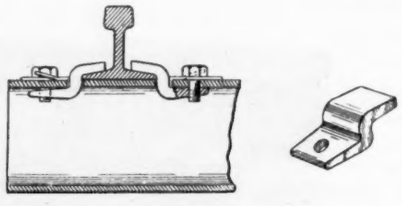

FIG. 2—RAIL FASTENERS WITH STANDARD STEEL TIE.

The use of an open slot or notch in the lower arm of the fastener to engage the bolt, permits the fastener to be removed or installed by simply loosening the nut and releasing the tension, doing away with the removal of the bolt. The form of engagement between the bolt head and the fastener, prevents the bolt from turning or loosening. By downwardly inclining the upper face of the lower arm of the fastener, the latter is prevented from coming into contact with the under face of the tie top, so that the full upward tension of the bolt is exerted in forcing down the upper arm of the fastener against the base of the rail.

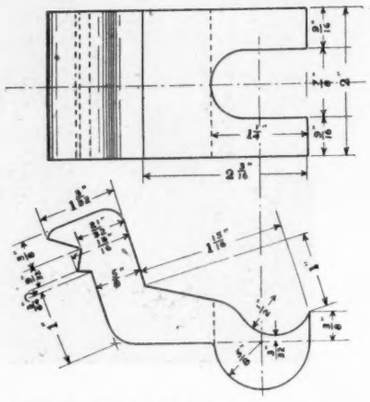

FIG. 3—STANDARD TIE FASTENERS.

### Shifting the Rail.

Several types of Standard fasteners are shown in the accompanying views. Where, as in ordinary street railway work, the rail is not to be shifted to take up the wear, the simple Z-shaped fastener, having but a single engaging face on its upper arm to clamp down the base of the rail, is recommended. This fastener is shown in Fig. 2. Where it is desirable to shift the rail after it has been in service a sufficiently long period to seriously enlarge the track gage, the type of fastener having a plurality of engaging faces shown in Fig. 5 is used. Thus when the rail is first installed, the outside fastener would engage the rail base with its lower or first engaging face. When the rail is worn sufficiently to require shifting to regage the track, the rail is shifted inwardly and the

outside fastener will engage the rail base with its second or upper engaging face, and the inside fastener will engage the rail base with its first or lower engaging face. It is evident that the different shifted positions of the rail are limited in number only by the number of engaging faces of the fastener. By using the proper fastener, the tie may be accommodated to any size or character of rail.

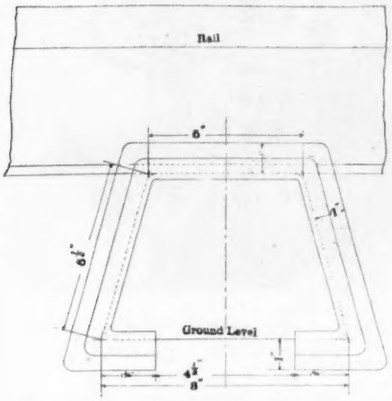


FIG. 4—END VIEW OF STANDARD TIE.

When it is desired to use a rail as part of an electric signal circuit as in the case of block signals, one rail of the track is insulated by the Standard insulating rail fasteners which embrace not only the base but also the web and ball of the rail, securing, between the fasteners and the surfaces of the rail, plates of insulating fiber of the character used at present by the leading railway systems in connection with their block signals. This is illustrated in Fig. 8. A similar installation is placed on the tie top beneath the base of the rail.

Where heavy traffic requires great solidity or rigidity as in steam railway construction or interurban traction lines, the type of steel tie shown in Figs. 5 and 8 wherein circumferential ribs or lips are formed around the tie at the points where the buckling strains take place, is designed. This enables the tie to assume the buckling strains without the necessity of the material being thickened or the characteristic contour being altered, except at the exact point required. A rib or lip is also provided at each end of the tie for the purpose of stiffening it, and to aid in the retention of ballast in case the tie is filled. The material of the bottom is of slightly greater thickness than that of the sides and top, and is from 3-16 to ¼ inch thick.

Another type of Standard tie is shown in Fig. 9 wherein a circumferential rib is provided at each side of the rail platform, that is the portion of the tie top crossed by the rail, thus forming a truss construction integral with the tie for the support of the rail, and enabling the material of the bottom of the tie to be reduced in thickness. In this type of tie, the circumferential ribs also serve to anchor the tie in the roadbed. In Fig. 6, the Standard fastener developed as an angle bar or fish plate for the connection of adjacent rail ends, is shown. Engagement with and support of the base, web and ball of the rail, is obtained by the angle bar which straddles and rests upon two adjacent ties. The feature of rail installation for signal purposes, is taken care of in the use of the angle bars, the connecting bolts through the angle bar and rails being also insulated.

Some of the advantages claimed for the Standard tie are as follows:

Its low net cost considering its ultimate scrap value; its long life in service; it permits the regaging of the track by shifting the rails to compensate for wear; varying widths of rail bases can be clamped to it; high strength; it can be adjusted to meet particular requirements; it assumes the vibration and wave motion caused by traffic, without injury to road-bed; it retains its proper alignment in the track by means of the anchorage provided; it permits of rail insulation to accommodate electric signalling systems; the box form facilitates drainage; the arrangement of circumferential ribs enables a resistance to crushing and buckling strains; it may be used either with a filled or unfilled interior; fasteners may be installed or removed without the removal of the securing bolt; the position of the securing bolt is always vertical, regardless of the position of the fastener, and the strain upon it a longitudinal one, obviating all shearing of the bolt or the stripping of its threads, where strain on the bolt is at an angle to its axis.

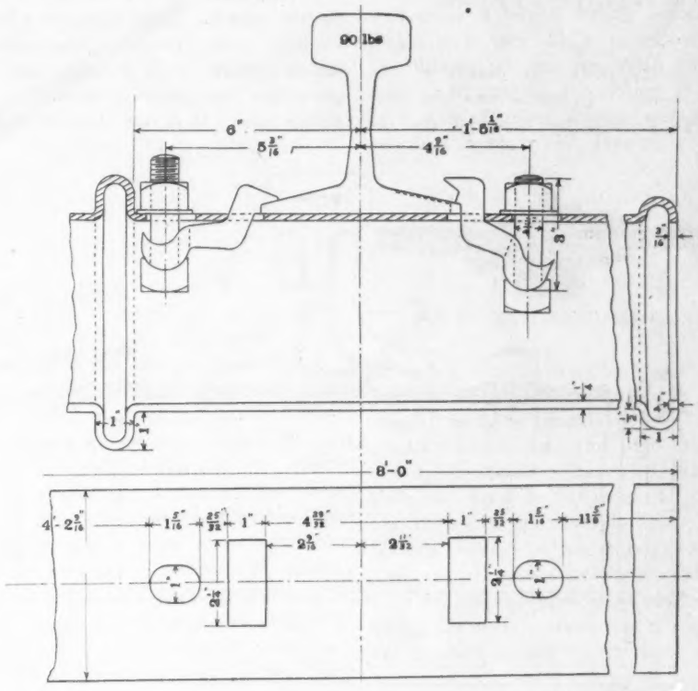


FIG. 5—STANDARD RAILROAD TIE; WEIGHT, 110 POUNDS.

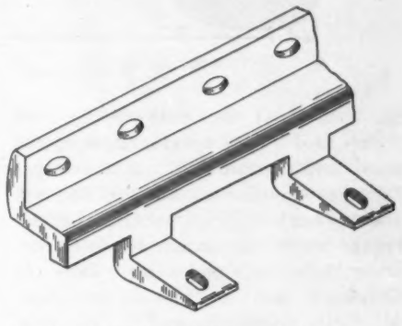

FIG. 6—STANDARD FASTENER DEVELOPED AS A FISH PLATE.

**Will Be Tested.**

The Pennsylvania Railroad Co. has ordered 1,000 Standard ties for testing purposes, and will install

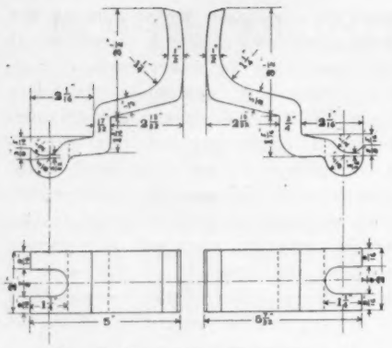

FIG. 7—INSULATED FASTENERS.

them in its tracks at points of ordinary traffic. In these ties the corrugated rib will be adjusted on the tie directly at the base of the rail. Until this and other experimental plans are carried out, arrangements for the manufacture of the tie will not be made. The company has already taken out papers of incorporation however, under the laws of Delaware, and its officers are Geo. M. Cote, president, and J. H. Harrison, secretary and treasurer.

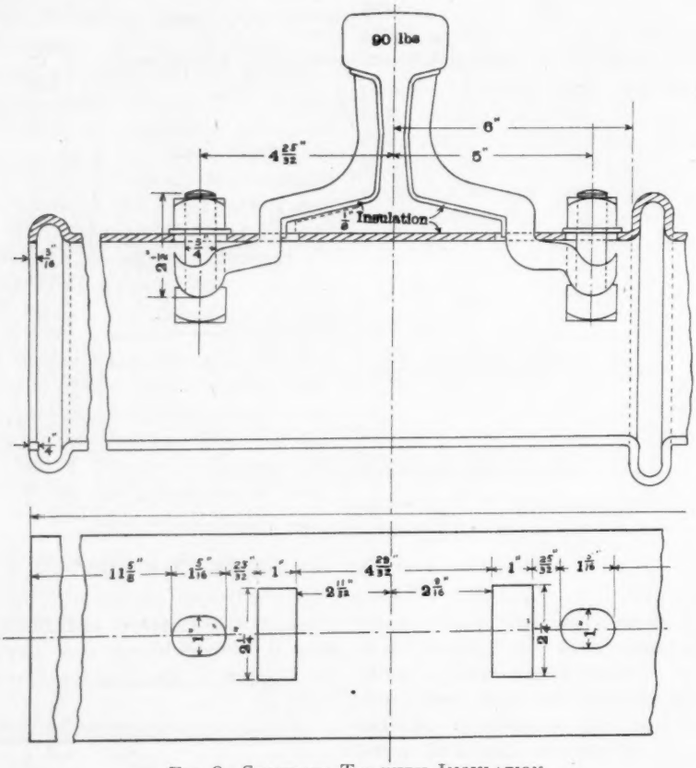


FIG. 8—STANDARD TIE WITH INSULATION.

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During 1907 New York state produced 1,018,013 tons of iron ore, against 905,367 tons the previous year. Thirteen mines were operated, two more than in 1906. The production was the largest of any year since 1890.

## IMPROVED CIRCULAR MILLING ATTACHMENT.

We illustrate herewith two interesting milling operations made possible by an improved circular milling attachment manufactured by the Kempsmith Manufacturing Co., Milwaukee. Fig. 1 shows the attachment used in milling the faces of 12-inch pulleys. The rough pulley is mounted firmly on the attachment, and through the power feed, is revolved against the inserted-tooth milling cutter screwed on the spindle. The table is adjusted slightly off center longitudinally, which results in a convex cut, thus providing the desired crown on the pulley face. It is not claimed that the milling machine in this job is the equal of a special or automatic machine designed for this purpose; the main advantage is that, in addition to the wide range of work possible on the standard miller, the use of this attachment accomplishes satisfactorily and almost automatically, this character of work which would otherwise require a more specialized and more expensive equipment. The extent of the cut and the consequent strain involved give an idea of the rigidity of the attachment.

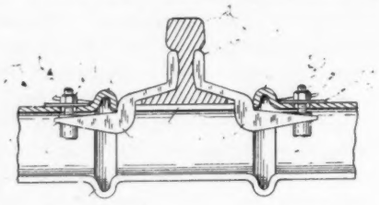

FIG. 9—STANDARD STEEL TIE WITH DOUBLE REINFORCING RIBS.

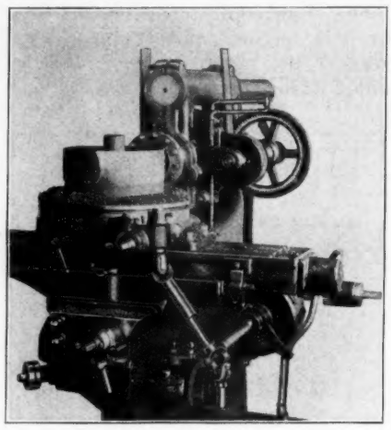

FIG. 1—CIRCULAR MILLING ATTACHMENT CROWNING A PULLEY.

Fig. 2 shows the attachment employed in cutting a gear, 6 pitch, 18 inches diameter, which is too large to swing in the dividing head. It is mounted horizontally on the attachment, and the power vertical feed on the miller is used in cutting the teeth. The worm shaft of the attachment is arranged to readily receive the index plate mechanism, as regularly furnished with the dividing heads, and since the ratio of worm and worm wheel is the same as on the dividing head, a full range of divisions is obtainable. The large diameter of the worm wheel insures great accuracy. This makes the circular attachment, in

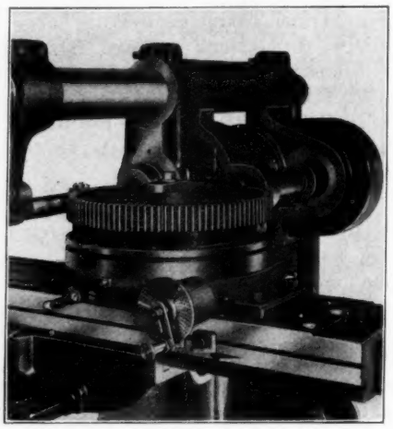

FIG. 2—CIRCULAR MILLING ATTACHMENT USED FOR GEAR CUTTING.

effect, a dividing head, especially valuable in cutting large diameter gears, which could not be handled easily in any other manner without the use of a specialized machine.

The attachment is built in two sizes, with 14-inch and 18-inch tables. The table has a solid bearing for almost its whole extent on the attachment base, and is clamped at any angle through 360 degrees by means of the same patent ring clamping mechanism as is used on the universal millers. The table can be released from the worm wheel for quick revolving.

FIG. 1—AMERICAN BENDING MACHINE.

## "AMERICAN" BENDING MACHINE.

The "American" bending machine, which is now being offered to the trade by the Bassett-Presley Co., Cleveland, embodies some unique features. The machine has four lugs, by which it can be fastened to a post, wall or bench, and as is seen from the accompanying illustration, is provided with a four-sided angle forming block, over which the work can be given a sharp bend, a slightly round corner, or a round bend, forming any desired angle. Its capacity for cold work is 1½ x ⅜ inches; rounds and squares up to ¾-inch; hot work up to 3 x 3¾ inches.

Rapid manipulation is a feature of the machine, but ½ minute being required to bend a joist hanger containing five angles. It is also useful for bending reinforcing rods in concrete work. All parts are made of crucible steel and will stand rough usage.

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The Modern Machinery Co., Stevens Point, Wis., has taken over the business of the Central City Iron Works, and will manufacture gasoline, traction and power engines, electric hoists, and a general line of structural iron for buildings, bridges, etc.

## A NEW VENTILATOR.

The accompanying illustration shows a new ventilator on which a patent has recently been granted and which is being manufactured by the Virginia Blower & Mfg. Co., Inc., Richmond, Va. This ventilator involves the use of an auxiliary air chamber encircling the chimney cylinder. The wind entering the wing compartments is reversed upwardly and outwardly in the direction of the arrows, thereby inducing a draft upwardly from the cylinder. The compression chamber edges are turned at such an angle as will discharge directly toward the center of the opening between the wind guard and cap, thereby giving the smoke or air a free opening without coming in contact with any surfaces tending to induce back pressure. The wings are not carried to the full height of the compression chamber, because of the fact that it is necessary for the wind to circulate around the periphery of the cylinder, so that it may leave on the opposite side of the ventilator from which the wind is blowing.

THE "ARROW" VENTILATOR.

The compression chamber, as shown with wings, is the feature wherein this ventilator is stated to differ from others, and, due to this feature, it creates a draft independent of atmospheric conditions. This ventilator is particularly adapted to mills, factories, shops, etc., where ventilation is needed.

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## AN IMPROVED PORTABLE EMERY GRINDER AND REVERSIBLE STAYBOLT CHUCK.

We illustrate herewith an improved type of portable pneumatic emery grinder manufactured by the Cleveland Pneumatic Tool Co., Cleveland. The machine, which can either be used in the hand or locked in the vise, will drive a 6-inch emery wheel with a 1¼-inch face at a speed of 2,400 revolutions per minute. With air pressure at 80 pounds per square inch, the tool uses 20 feet of air per minute running light. The length over all, including throttle handle, to tip of arbor, is 22¼ inches and the gross weight is 17½ pounds.

FIG. 1—PORTABLE EMERY GRINDER.

The feature of the new staybolt chuck, also shown herewith, which is built to hold bolts from ¾-inch to 1⅛ inches is its reversibility. It frequently occurs when running a staybolt that it sticks or stops and must be backed out part way and started afresh, in which operation the reversible feature of the chuck aids materially. The chuck can be applied directly to standard bolts without squaring the ends. The necessary grip on the bolt is obtained by a loose roller, which changes its fulcrum automatically and wedges the bolt fast against the two stationary dogs, forming a tight grip.

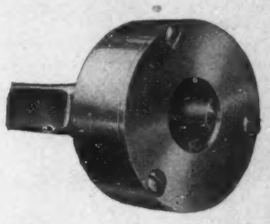

FIG. 2—STAYBOLT CHUCK.

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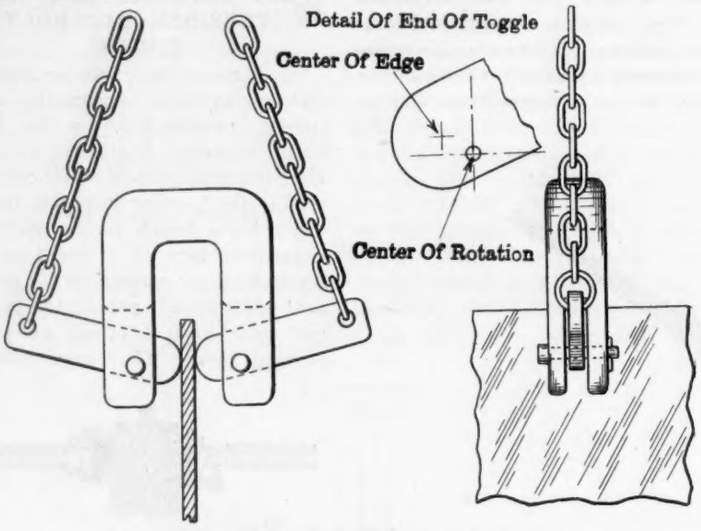
James Barker has transferred to James Barker, Inc., the foundry at the northeast corner of Sixth and Cayuga streets, Philadelphia, including the complete foundry and equipment, with the lot, containing nearly three acres.

## A DEVICE FOR HANDLING PLATES.

A simple device is in use by the Walsh & Weidner Boiler Co., Chattanooga, Tenn., for gripping plates to be handled by the crane. The usual method of holding plates for this purpose is by means of a U-clamp suspended from the crane hook, set over the plate and which is fastened by means of a steel wedge driven between it and the plate. This wedge is more or less insecure, and sometimes allows the plate to slip.




DEVICE FOR HANDLING PLATES ON THE CRANE.

The device adopted by the above mentioned company to overcome the defects of the ordinary clamp, is shown in the accompanying illustration. It comprises simply a U-shaped piece of steel, at the extremities of which are pivoted two levers, the ends of a chain sling being attached to the outer ends of the lever. The inner ends of the levers are rounded in a semi-circle, but the fulcrum of the levers is placed eccentrically to the semi-circle. Thus when the U-shaped piece is slipped over the edge of a plate, and a stress is brought on the chain, the levers act as a toggle joint and grip the plate firmly between them. It can then be lifted and carried to any desired point by the crane. The saving in time over the ordinary clamp by the use of this device, is obvious. In addition it is much safer inasmuch as the greater the weight of the plate, the more firmly is it gripped by the toggle levers.

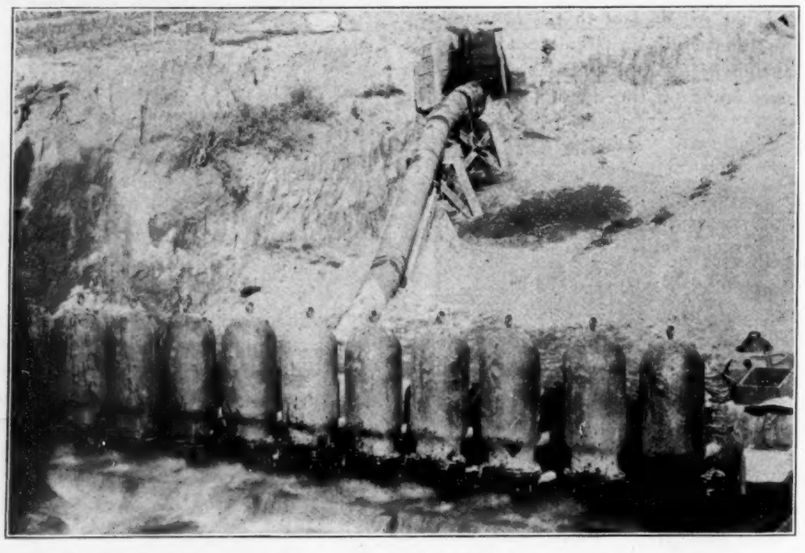


FIG. 1—INSTALLATION OF COLUMBIA HYDRAULIC RAMS AT SUNNYSIDE, WASH.

## A NEW TYPE OF HYDRAULIC RAM.

The accompanying illustrations show features of and an installation of hydraulic rams made by the Columbia Steel Co., Portland, Ore. This ram is stated to have a high efficiency and is made in sizes from 1-inch up. It will operate under heads of from 2 feet to 40 feet and will elevate water 40 feet for every 1 foot of fall.

Referring to Fig. 2, which is a cross sectional view of the ram, A is the ram body through which the drive pipe is connected by a flanged joint. B is the waste valve suspended by a curved arm from the bearing D. The spindle C, carrying the waste valve, has attached to it by means of an adjustable collar E a flat coil spring engaging a lug on the flange of the frame body. By means of this collar, the spring may be set to any desired tension to meet the varying conditions of head and speed. G is the discharge valve, through which water enters the air chamber H, from whence it is removed by a pipe connected at I.

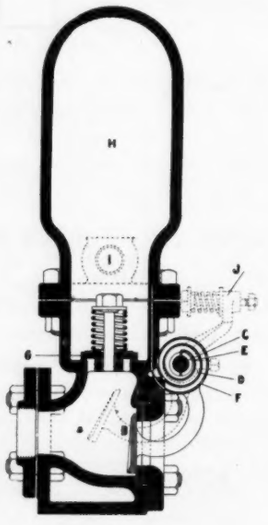



FIG. 2—CROSS SECTION OF COLUMBIA HYDRAULIC RAM.

The operation of the ram is as follows: The drive water flows through the open waste valve B until the required velocity is attained, when it closes B. During its flow the water has gathered a certain amount of energy, which is liberated when the flow is suddenly arrested and overcomes the discharge pressure on top of the valve G, which opens and allows a portion of the water to enter the air chamber. Closing B rotates the collar E, causing the spring F to come in tension until the flow through

the discharge opening is completed. When the discharge valve closes, the water in the drive pipe comes to rest and the direction of the moving column is reversed, causing a tendency to a vacuum in the upper portions of the ram body. The tension of the spring F assists the partial vacuum in opening the waste valve B and admits air immediately under the discharge valve G, ready to be discharged into the air chamber on the next stroke. Where the ratio of fall to lift is small and the rebound in the water consequently slight, an auxiliary spring is attached to an arm J projecting from the hub of the waste valve on the spindle C. This is called the rebound or low ratio attachment.

Among the advantages claimed for this ram are the direct and smooth passage provided for the water until it has left the waste valve; the elimination of the greatest possible amount of the loss by friction and the consequent quick closing of the waste valve utilizing the maximum amount of power in the water. Another advantage claimed is the placing of the delivery valve immediately above the waste valve, deflecting the course of the water through the delivery valve by the shape and position of the waste valve. Another feature is the injecting of a supply of air into the upper portion of the ram body with each stroke, preventing water logging.

The illustration, Fig. 1, shows an installation of these rams at Sunnyside in the Yakima Valley, Wash., consisting of 11 6-inch Columbia rams operating under a fall of 37.6 feet and a lift of 143.11 feet from the rams. Under these conditions, with a consumption of 5.11 cubic feet per second of drive water, a quantity of 1.15 cubic feet per second is lifted to the point of delivery.

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The Eagle Iron & Brass Foundry, Inc., Passaic, N. J., is at work on improvements which, when completed, will practically double its capacity, giving it a maximum melt of between 30 and 40 tons daily. The new foundry measures 85 by 130 feet and the machine shop about 35 by 100 feet. One of the old buildings at the plant has been replaced by a larger structure and the two cupolas now in operation are to give way to larger cupolas. W. M. Latham is president.

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The Western Tube Co. is planning extensive improvements for the Kewaunee, Ill., plant, which will total about $50,000. It includes an improved system of fire protection.

## ASH HANDLING EQUIPMENT BUILT FOR THE WABASH RAILROAD.

The Case Mfg. Co., Columbus, has recently completed an I-beam bucket-operating hoist mounted on a cantilever gantry and installed at the Decatur, Ill., shops of the Wabash railroad. The hoist is operated by three motors, one for bridge travel, one for hoisting and operating the bucket, and one for trolley traverse. These are all three-phase, 60-cycle alternating current motors. The gantry as built serves the cinder pits on either side of the center tracks and may be arranged for handling coal from the tracks to the engine tenders if desired. The main hoist has a lifting speed of 75 feet per minute, a trolley travel of 100 to 250 feet per minute and a travel of the gantry ranging from 150 to 250 feet per minute.

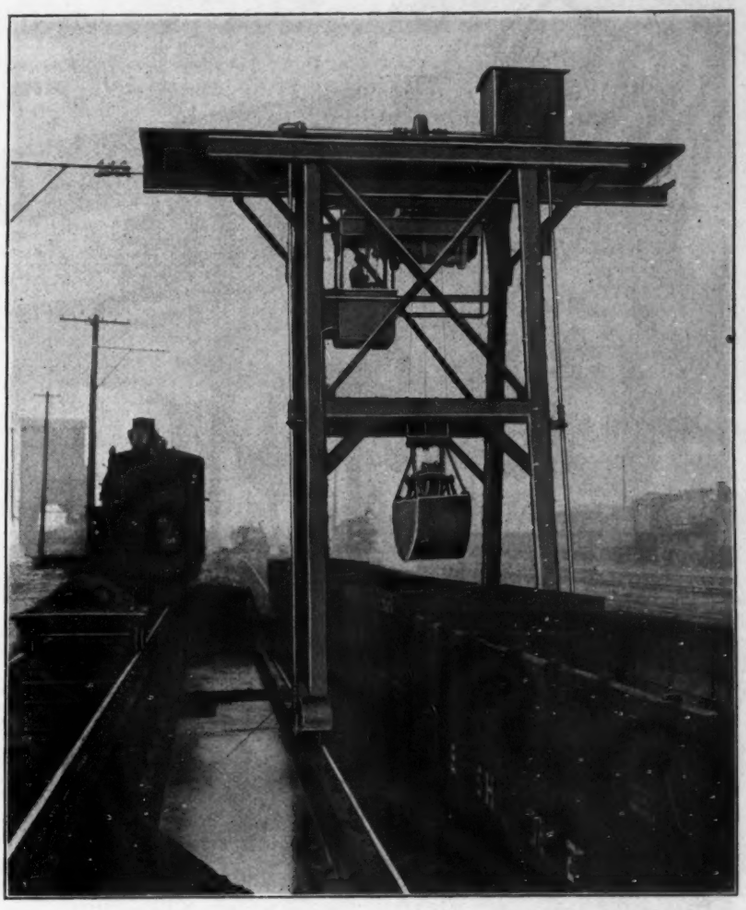

FIG. 1—GANTRY ASH HANDLING CRANE FOR WABASH RAILROAD.

The grab bucket has a capacity of 2 cubic yards. It is provided with one closing and two holding ropes, which prevent any twisting of the bucket. The operating mechanism is so arranged that the bucket can be raised or lowered either open or closed. The load is carried by the automatic load brake, which prevents the dropping of the bucket through the carlessness of the operator, or the temporary interruption of electric current. The hoist is provided with a limit switch to prevent over travel and consequent damage. Steel wheels are provided on the hoist, operating on the lower flange of a standard I-beam. It is also equipped with steel gears throughout, and has two drums and the necessary trucks for operating the auxiliary drum. It is provided with swivel trucks to permit travel on a curved track if desired. The truck wheels are supported on ball bearings with 2½-inch chrome steel pintle pins. In addition a steel yoke is arranged to fit around the lower flange of the beam, to prevent the hoist from falling in the improbable event of the pins breaking. Steel castings are used throughout.

The over all length of this hoist is 9 feet, and it is 5 feet 6 inches

from the back of the cage to the center of the hook and 3 feet 6 inches from the center of the hook to the outside of the truck wheels. The cage is 3 feet 3 inches long by 3 feet 9 inches wide, the latter being the maximum width of the machine outside the bucket. The bottom of the cage is 8 feet 6 inches from the bottom of the I-beam. The cage is attached directly to the trolley and in it are the controllers, switch board and resistances.

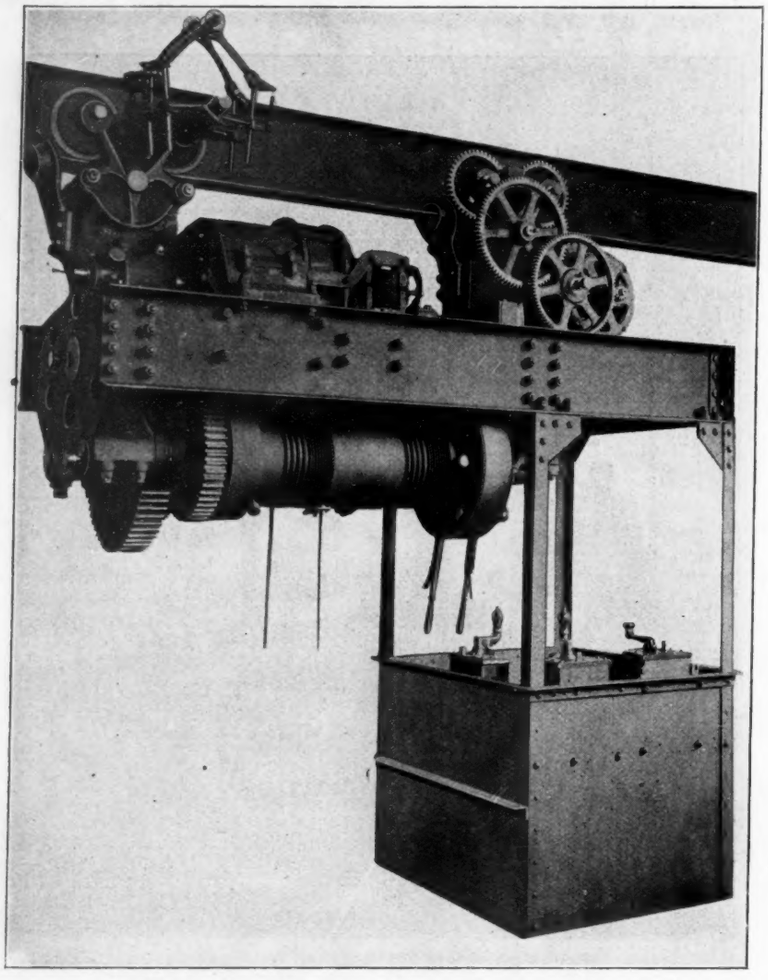

FIG. 2—TROLLEY FOR GANTRY ASH HANDLING CRANE.

The operation is as follows. Assuming that the bucket is lowered open, the brake levers are in the central position. Reversing the hoist controller closes the bucket, the auxiliary drum automatically taking up slack in the holding rope. When the bucket is closed and the hoist starts upward, a clutch lever is thrown in, making both drums travel at the same speed, and it is then possible to hoist or lower with the bucket closed. When the bucket is brought to the proper position for dumping, the brake lever is set and the clutch lever released. On reversing the hoist controller the operation is completed. To lower, it is necessary to set the clutch and release the brake lever.

The arrangement of machinery for driving the bridge is shown in the illustration. The motor drives direct into a gear casing containing the first reduction gears at the center of the machine. The shaft is extended and drives through a number of bevel gears at each end of the gantry through a vertical shaft to the truck wheels. The gears are entirely enclosed and step bearings are provided for the vertical shaft.

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N. Lindauer, of New York City, has purchased the Keller iron ore lands at the Capon Iron Works, near Wardensville, W. Va., paying about $13,500 for them. He has options on several other tracts in that locality said to be underlaid with iron ore.

## CONTRACTS LET

### And Construction of Huge Frisco Power Plant Is Proceeding.

(Special Correspondence.)

San Francisco, July 2.—The Great Western Power Co., one of the largest power development concerns in the world, has just let a contract to the Globe Construction Co. for the erection of a transforming sub-station in Oakland, across the bay from San Francisco. The power company acquired a block of land in East Oakland last December, and has since secured a large parcel of ground abutting on the former site. The company has also bought seven acres of land on Sessions basin for $150,000, on which to build a steam power house at a cost of $500,000, where 25,000 horsepower will be developed by means of fuel oil. The site is close to deep water and accessible to large vessels, while the oil will be piped from the wells to the bay. The sub-station will be built of brick and be of an ornamental design, and machinery will be installed for the transformation of the power from the Big Bent plant on the Feather river. A subway, one mile in length, will connect the sub-station and the steam power house.

The Great Western Power Co., a description of which has been published exclusively in THE IRON TRADE REVIEW, is supposed to be backed by the Gould interests. Edwin Hawley, vice president of the Western Pacific, is also president of the power company, and it is understood that much of the power generated will be used for electrizing the lines of the Western Pacific, the remainder to supply power for many industries from the mountains to the bay. The company has already expended millions of dollars and many more millions will be required to complete the work. The transmission lines are now in course of construction, and about 40 miles of them have been finished. Stretches have been completed above Oroville, in Sacramento and Contra Costa counties. The transmission cables are carried on steel towers, and fully 65,000 horsepower will be available Oct. 1. When completed, the company will be able to furnish 500,000 horsepower and supply six counties between the mountains and the bay of San Francisco.

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Chief Engineer J. H. Ames is preparing plans for a one-story factory building for the American Car & Foundry Co., to cost $100,000.

# Industrials Touch High Water Mark

Vigorous trading resulting in the transaction of three times the volume of business of the week before, a sustained advance in prices showing gains in industrial stocks running from one to nearly six points together with practical indifference toward the outcome of the Denver convention distinguished the market week just closed. Steel stocks showed remarkable strength, the preferred advancing to the highest in three years on Wednesday, and they proved a decided stimulus to the general market. The government crop report which appeared the same day was satisfactory with the exception of a slight deterioration in wheat. Copper metal advanced also and better reports by electrical companies helped the copper stocks.

For four successive days the upward movement continued. Monday shares were active and firm, the statement of the chairman of the Steel Corporation contributing to the improved feeling. The reported decrease by 37,000 of the cars heretofore carried on the idle list helped some. Tuesday's early advances were followed by reaction, the close being irregular. Wednesday's early strength was carried through the entire day, the close being firm and higher. The declaration of the usual semi-annual dividend by the B. & O. although $1,300,000 had to be taken from surplus to make up the deficit of the earnings, caused surprise Thursday but the general market continued active. Friday's opening showed recessions from one to two points and Saturday closed rather heavy with fractional declines.

Call money ruled throughout the week generally at from 1 to 1¾ per cent, while time loans were quoted from 1¾ to 3½ per cent. The new system of publishing the actual as well as the average conditions of the New York banks showed its real value although the general bank statement situation was rather disturbed and perplexing in view of the money movement induced by July dividend disbursement. Actual clearing house bank figures showed loans increased $15,912,400, deposits increased $20,706,100 and specie increased $6,722,000, the percentage of reserve being 28.97, or a decrease of 0.01. Statement of state banks and trust companies showed loans decreased $2,116,400; specie increased, $6,608,000; net deposits increased $19,458,200, the percentage of reserve being 35.4, a decrease of 0.8.

The increased activity in the stock market has been accompanied by a better inquiry for bonds yet the movement has been relatively small compared with that which usually follows July disbursements. Dun reports 262 failures against 277 the week before and 202 for corresponding week last year. Stagnation is as much in evidence abroad as in New York the preceding week, being especially noticeable in Paris, London and Berlin. The Bank of France continues to pile up gold reserves, leading to the suspicion that not only the financing of the forthcoming Russian loan but also lending substantial financial aid to Berlin institutions and industries shortly is engaging the attention of Parisian bankers. This latter movement makes more firmly for international peace than many a diplomatic conference held in years. The number of shares dealt in for the week was 3,103,400 compared with 851,600 the preceding week and 3,801,400 the corresponding week last year. Bonds exclusive of government bonds were sold to the amount of $14,912,000 compared with $9,548,000 the preceding week and $5,068,000 the corresponding week last year.

**THE LEADING INDUSTRIAL SECURITIES.**

| | Closing Quo. July 11 | Changes in Week | Date 1908 Ann. M't'g | Stock Outstanding | Dividend Basis | Dividend Last Declared | Dividend Date Last Div. Pay. |
|---|---|---|---|---|---|---|---|
| Allis-Chalmers | 11¼ | − ¼ | Sept. 3 | 19,820 000 | | | |
| Allis-Chalmers pr | 34 | − ½ | | 16.150,000 | 7 cum | 1¾ Q. | Feb., 1904 |
| American Can | 5 | + ⅛ | Feb. 3 | 41.233.300 | | | |
| Am. Can pr | 59 | +4¼ | | 41,233,300 | 7 cum | 1¾ Q. | July, 1908 |
| Am. Car & Foundry | 86⅛ | +1⅞ | June 25 | 30,000,000 | | ⅛ Q. | July, 1908 |
| Am. Car & Fdy. pr | 101 | +3⅝ | | 30 000,000 | 7 n. c. | 1¾ Q. | July, 1908 |
| American Loc | 49 | + ⅛ | Oct. 20 | 25,000,000 | 5 | 1¼ Q. | Aug., 1908 |
| American Loc. pr | 102¼ | + ¼ | | 25,000,000 | 7 cum | 1¾ Q. | July, 1908 |
| American Ship | 46¾ | +3¾ | Oct. 14 | 7 60 .000 | 4 | 1 Q. | June, 1908 |
| American Ship pr | 100½ | ..... | | 7,900,000 | 7 n. c. | 1¾ Q. | July, 1908 |
| Am. Steel Foundries | 8 | + ⅛ | Oct. 6 | 15 810 000 | | | |
| Am. Steel Foundries pr | 41 | +4 | | 17,240.000 | 6 cum | 2½ | Aug., 1 04 |
| Barney & Smith | 50 | ..... | June 2 | 2.000,000 | 4 | 1 Q. | Sept., 1907 |
| Barney & Smith pr | 105 | ..... | | 2.500 000 | 8 cum | 2 Q. | June, 1908 |
| Bethlehem Steel | 17¼ | +1⅜ | April 7 | 14.862,000 | | | |
| Bethlehem Steel pr | 46⅛ | +2⅛ | | 14.908 000 | 7 n. c. | ¾ Q. | Feb., 1907 |
| Cambria Steel | 33¾ | +2¼ | March 17 | 45,000.000* | 6 | 1½ S. A. | Aug., 1903 |
| Cambria Iron | 45 | ..... | | 8,468.000* | 4 | 2 S. A. | April, 1908 |
| Chicago Pneumatic Tool | 23½ | ..... | Feb. 17 | 6,145,800 | 4 | 1 Q. | Oct., 1907 |
| Colorado Fuel | 27½ | + ¾ | Oct. 19 | 34 235 500 | | 3½ | April, 1902 |
| Crucible Steel | 57⅞ | + ⅛ | Oct. 21 | 24.578 400 | | | |
| Crucible Steel pr | 40½ | + ¾ | | 24,436.500 | 7 cum | 1 Q. | Dec., 1907 |
| Empire Steel | 8 | ..... | Feb. 26 | 1,254,770 | | | |
| Empire Steel pr | 45 | ..... | | 2 500,000 | 6 cum | 3 S. A. | July, 1908 |
| Fay & Egan | 100 | ..... | Feb. 18 | 1,000,000 | 6 | 1¾ Q. | May, 1908 |
| Fay & Egan pr | 110 | ..... | | 1,000 000 | 7 cum | 1¾ Q. | May, 1908 |
| General Electric | 136¼ | +5¾ | May 12 | 65,167,400 | 8 | 2 Q. | July, 1908 |
| Harbison-Walker | 18 | ..... | Jan. 20 | 18,000.000 | | ½ | Oct., 1907 |
| Harbison-Walker pr | 71 | +1 | | 9,6 0,000 | 6 cum | 1½ Q. | July, 1908 |
| International Pump | 23¾ | + ⅝ | June 2 | 17.787 300 | | 1 | April, 1905 |
| International Pump pr | 77 | −1 | | 13,835,000 | 6 cum | 1¼ Q. | May, 1908 |
| Lackawanna Steel | 34 | ..... | March 11 | 34,971 400 | | | |
| Lake Sup. Corp | 7 | +1¼ | Oct. 7 | 40,000,000 | | | |
| New York Air Brake | 71 | +4⅞ | June 18 | 8 012,500 | 8 | 2 Q. | Oct., 1907 |
| Niles-Bement-Pond | 130 | ..... | Feb. 5 | 8,500 000 | 6 | 1½ Q. | June, 1908 |
| Niles-Bement-Pond pr | 100 | ..... | | 2.000,000 | 6 cum | 1½ Q. | May, 1908 |
| Otis Elevator Co. | 34 | ..... | March 16 | 6 156,600 | | 1½ S. A. | April, 1908 |
| Otis Elevator Co. pr | 88 | ..... | | 5 449,500 | 6 n. c. | 1½ Q. | July, 1908 |
| Penn. Steel | 60 | ..... | May 11 | 10.770 000 | | | |
| Penn. Steel pr | 97 | +1 | | 16.5 0 400 | 7 n. c. | 3½ S. A. | May, 1908 |
| Pittsburg Coal Co. | 12 | +1 | Feb. 10 | 28,853.400 | | | Nov., 1906 |
| Pittsburg Coal Co. pr | 42¼ | +1 | | 27,030.800 | 7 c. | 1¾ | April, 1905 |
| Pressed Steel Car | 29 | +1 | Feb. 19 | 12,500,000 | | 3 | Aug., 1904 |
| Pressed Steel Car pr | 87 | +4¼ | | 12.500,000 | 7 n. c. | 1¾ Q. | May, 1908 |
| Pullman | 160 | +4¾ | Nov. 11 | 100 000 000 | 8 | 2 Q. | May, 1908 |
| Railway Stl. Spring | 37 | +1 | March 5 | 13,500.000 | 4 | 2 S. A. | April, 1908 |
| Railway Stl Spring pr | 98 | +2⅞ | | 13,500.000 | 7 cum | 1¾ Q. | June, 1908 |
| Rep. Iron & Steel | 18¾ | + ⅝ | Oct. 21 | 27,191.000 | | | |
| Rep. Iron & Steel pr | 69¼ | +2 | | 20,416 900 | 7 cum | 1¾ Q. | April, 1908 |
| Sloss-Sheffield | 53½ | +4 | March 11 | 10,000,000 | 5 | 1 Q. | June, 1908 |
| Sloss-Sheffield pr | 97 | + ⅜ | | 6,700.0 0 | 7 n. c. | 1¾ Q. | July, 1908 |
| U. S. Pipe & Fdy. | 22 | +1 | June 24 | 12,500,000 | 4 | 1 Q. | Dec., 1907 |
| U. S. Pipe & Fdy pr | 68¾ | +2¾ | | 12 500,000 | 7 n. c | 1¾ Q. | Sept., 1908 |
| U. S. Steel | 39¾ | +1⅛ | April 20 | 508,302,500 | 2 n. c. | ½ Q. | June, 1908 |
| U. S. Steel pr | 107⅛ | +3½ | | 360,281,100 | 7 cum | 1¾ Q. | June, 1908 |
| U. S. Steel 5' | 98⅜ | + ⅛ | | 463,798,000 | 5 | 5 A. | ..... |
| Va. Iron, Coal & Coke | 50½ | +1 | Nov. 17 | 9,073 680 | | | |
| WestinghouseElec | 55¾ | +2 | June 24 | 23 933.200* | 10 | 2½ Q. | Oct., 1907 |
| WestinghouseAir Brake | 99⅛ | +1⅛ | Oct. 6 | 11,000,000* | | 2½ Q. | July, 1908 |

Par value of shares, $100, except those starred (*), $50

### Copper Stocks.

**New York.**—Amalgamated Copper closed 68⅛, a net gain of 1⅝.

**Boston.**—Butte Coalition closed 23, a net gain of ½; Calumet & Arizona closed 112, a net gain of 2½; Calumet & Hecla closed 665, a net loss of 5; North Butte Mining closed 70⅛, a net gain of 3⅛; Quincy Mining closed 88, no change.

# NEWS FROM MANY INDUSTRIES

**New Buyers:—**

W. V. Wills, J. W. Williams, F. A. Waters and others have incorporated the Malden Machine Works, Malden, Mo., which is capitalized at $6,300.

The Wellington Mfg. & Stamping Co., St. Louis, Mo., with $25,000 capital stock, has been incorporated by J. W. Seifert, Alfred Allina and Henry H. Furth.

Julius Tuteur, Adolph Tuteur, A. V. Cannon, Clifford A. Neff and R. H. Schindler have incorporated the Duplex Shear Lock Co., Cleveland, with $10,000 capital stock.

The Blue Ridge Iron Co., Portland, Me., to engage in a mining business, has been incorporated with $250,000 capital. The officers are president, C. E. Eaton, and treasurer, T. L. Croteau.

The Wisconsin Metals Co., British Hollow, Grant county, Wis., has been incorporated with $60,000 capital stock. The incorporators are: R. D. Durly, Charles Slater and Charles Rick.

The Mt. Pleasant Connellsville Coke Co., with a capital of $5,000 has been incorporated by Treasurer William Q. Wilson and Directors J. U. Kuhns and Clarence Kline, all of Greensburg, Pa.

The European Brake Shoe Co., West Orange, N. J., has been incorporated to manufacture railway appliances, capital $500,000. The incorporators are William D. Sargent, George M. Judd and Edward H. Fallows, 32 Cortlandt street, New York City.

The Buffalo, Lockport & Rochester Rolling Stock Co., Niagara Falls, N. Y., to manufacture railway equipment, has been granted a charter. The capital stock is placed at $50,000, and the incorporators include S. F. Carr, R. D. Moore and W. M. Wheeler, Buffalo, N. Y.

The Ellis Tool & Supply Co., New Haven, Conn., has filed a certificate of incorporation. The company has a capital of $5,000, and the incorporators are Edward L. Clark, of Orange, Conn., L. E. Jennings, of Yalesville, and Charles E. Jennings, of New Haven, Conn.

The Press Feeder Co., New York City, has been chartered to deal in patents, manufacturing machinery, tools, etc., with $200,000 capital stock. The incorporators are George L. Lewis, Charles H. Stanton and Ralph P. Buell, 42 Broadway, New York City.

The Dighton Foundry Co., Taunton, Mass., has been granted a charter to manufacture stoves. The capital stock of the company is placed at $50,000, and the officers are: President, Herbert Q. Presbrey; treasurer and clerk, Fred P. Leonard; both of Taunton, Mass.

The Lake Superior Iron & Metal Co., Ripley, Mich., has incorporated with $30,000 capital stock. The company was chartered for the purpose of engaging in a general merchandise business, buying and selling metals and railroad appliances.

The Hicks Motor & Mfg. Co., Garwood, N. J., to manufacture dynamos and motors with $25,000 capital, has been incorporated by Albert B. Craft, Cranford, N. J., Harry E. Hicks, Plainfield, N. J., and William B. E. Elliott, Westfield, N. J.

A charter has been granted to the Charlette Power Co., Jersey City, to manufacture street railway cars, car trucks, wheels, etc., with a capital of $300,000. Those named in the charter are Oscar L. Wold, Wade H. Adams and T. C. Raine, all of Jersey City.

James L. Mason, Newark, N. J., to manufacture leather and belting, with $50,000, has been incorporated by James L. Mason, 87 Third avenue; George W. Frey Jr., 184 South Eleventh street; Clifford A. Connelly, 501 Bergen street; Robert A. McCready, 362½ New street, all of Newark.

Articles of incorporation have been filed by Charles J. Smith & Co., New York, to manufacture and deal in hardware, tinware, etc., with a capital of $20,000. The incorporators are Charles J. Smith, 35 Cornelia street; William E. Smith and Mary A. Smith, 37 Eldert street, all of Brooklyn.

The Universal Metal Specialty Co., New York City, to manufacture novelties and specialties, hardware, etc., with $75,000 capital has been incorporated by Henry G. Ingersoll, Frederick W. Mayes, John T. McCall, 13 Park Row; George E. Spare, 143 West 126th street, all of New York; Frederick Tench, White Plains.

The Cook Spring Co., New York City, to manufacture springs and metal goods, with $50,000 capital, has these incorporators: Amalia M. Donally, 511 Bainbridge street, Brooklyn; William A. Scholey, 420 East 106th street, and Jehiel T. Hurd, 206 Broadway, both of New York City, Bertha G. Donally, Tenafly, N. J.

The Point Marion Machine & Mfg. Co., Point Marion, Pa., has filed articles of incorporation. The capital stock is $10,000, and the directors are Lewis Lemley, Cassville, W. Va.; C. L. Titus, Unniontown, Pa.; Dora Lockard, A. S. Reichel, M. Lee Titus, A. E. Dilliner and J. K. Conn, all of Point Marion, Pa.

The International Hardware Supply Co., New York City, has been granted a charter to manufacture hardware, hardware supplies, etc., with $5,000 capital. The incorporators are E. Medley Scovil, New York Times building; Fred Knowlton, 638 East 139th street; G. Q. Dean, 1628 Amsterdam avenue, all of New York City.

The Ballin Indicator Co., New York City, to manufacture railroad and other signals, and indicator devices, with $50,000 capital stock has been chartered by Albert V. Ballin and Mattie Ballin, Yonkers, N. Y.; Edward C. Ellsworth, 499 West 145th street; John Manheimer, 21 West 111th street, both of New York.

Articles of incorporation have been filed by the Manufacturers' Metal Plate Co., New York City, to manufacture metal name plates, signs, dials, scales, etc., with a capital of $25,000. The incorporators are: Levon Harpootlian, 54 Union Square; John A. Bardizbanian, 64 Murray street; Aotis M. Macmillan Jr., 60 Wall street, all of New York City.

The Elliott Fisher Co., Jersey City, has been incorporated with $3,000 capital stock by W. L. Dench, Pelham, N. Y.; W. H. Behr, 2 East Sixty-sixth street, New York City, and Edward Beekman, 19 Maple street, Bronxville, N. Y. The company is chartered to manufacture typewriting machines, adding and counting machines, etc.

Eastern Metal Works, New York City, manufacturer of metal work, has been incorporated with $10,000 capital stock. The charter members of the company are: Joseph Emanuel, 594 Ralph avenue; Morris Malawista, 1587 Lincoln Place, both of Brooklyn; Wolf Silberman, 181 Avenue C., New York City; Israel Binkowitz, 827 Melrose avenue, the Bronx.

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**New Construction:—**

The Sheffield Car & Foundry Co. has purchased 188 acres for a factory site on the belt line in the Blue valley, near Sheffield, Mo.

M. Billinger, Saranac, Mich., is building a two-story machine shop,

24 x 60 feet, to be used for general machine building and repair making.

The Wonder Stove Mfg. Co., Washington C. H., O., has just resumed work after having been closed down for sometime for repairs and substantial additions.

The Clarence Garrigus Machine Co., Hartford, Conn., has begun excavating for its new building, the contract providing that the building must be completed in three months.

The American Cable Fence Co., Peoria, Ill., in line with its previous announcement that it would enlarge the plant, has purchased a building and land at Adams and Maple streets, Peoria.

The Elevator Supply & Repair Co., Chicago, Ill., by two recent purchases, has gained a total frontage on South Jefferson street of 90 feet and a depth of 80 feet with additional buildings at a cost of $60,000.

A new machine shop, 50 x 80 feet, is being erected by the Hunsader Machine Co., Sturgeon Bay, Wis. Extensive new machinery is being installed in the plant of the Crary Canning Co. of the same city.

The National Machinery Co., Tiffin, O., which recently increased its capital stock to $100,000, has plans for doubling its building capacity, and substituting electric motors for steam power throughout the plant.

The Straubel Machine Co., Depere. Wis., which was recently incorporated with a capital stock of $25,000, is planning to build a modern plant on property recently purchased. The machine shop will be 60 x 100 feet, one story high.

The National Brake & Electric Co., Milwaukee, Wis., formerly the National Electric Co., is planning to begin at once the erection of core and annealing ovens at its plant on Larkin street. The building will be of brick, estimated to cost about $10,000.

The new concrete building of the Terwedo Mfg. Co., Superior, Wis., is nearing completion and new machinery is being installed. The company makes a specialty of the manufacture of metal linings and brass and copper fixtures.

Extensive improvements are under contemplation by the Wisconsin Engine Co., Corliss, Wis. An addition will be erected to the foundry and new cottages are to be put up for the employes who will also have the privileges of a new club house.

Plans for the construction of the building by the Union Drawn Steel Co. at the northeast corner of Ninth and Willow streets, Philadelphia, have been completed. The building will be 81 x 116 feet, one story high, and it is estimated to cost $25,000.

The Manitowoc Boiler Co., Manitowoc, Wis., is enlarging its plant by an addition 60 x 180 feet, which will be followed by another addition to be built later in the summer. When its new plant is completed, the company will occupy a site covering two city blocks.

George Fifield, Lowell, Mass., manufacturer of engine lathes, advises that he is erecting on the site of the old shops on Marginal street, a new building covering about 30,000 square feet, of which 25,000 square feet is one story, with monitors for cranes. The whole floor space will be about 45,000 square feet, and the construction is concrete so far as practicable.

The first permanent fireproof construction to be undertaken in the burnt district of Chelsea, Mass., is that for Samuel Cabot, Inc. The contracts awarded to the Aberthaw Construction Co., Boston, Mass., call for the rebuilding of a large part of the lamp black factory, a paint grinding mill, storage building and quilting shop to replace those destroyed, also a concrete wall along the front of the plant. The buildings are to be of reinforced concrete with metal sash, wire glass windows and fire proof doors along the center front of the lot, making an indestructible fire proof barrier to the rest of the property.

The American & British Mfg. Co., Providence, R. I., manufacturer of rapid fire guns, special machinery, tools, engines, etc., advises respecting the new buildings to replace those recently destroyed by fire: The machine shop will be 104 x 105 feet and the power house 38 x 124, to replace the destroyed buildings, with steeel frame and brick walls and large double closed window surface. Two additional boilers will probably be required in the boiler room. The power and drive generators will be supplied by Diesel engines made by the company. A 15-ton crane, 50 foot span for the center span in the machine shops, and two 5-ton hand cranes for the engine room will be required.

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**General Industrial:—**

The Hamson & Tunelius Machine Co., Chicago, has filed papers changing its name to the Tunelius Machine Co.

The machine shop of Nathan H. Hirshberg & Sons, Baltimore, was recently sold at auction to James T. Harlan, for $21,000.

The Illinois Corrugated Metal Co., Bloomington, Ill., has filed articles increasing its capital stock from $22,000 to $50,000.

The Ensley Foundry & Machine Works, Ensley, Ala., which has been closed during the recent money stringency, has reopened for business.

James H. Jenson has purchased the property on which is located the Trolander machine shop, Grantsburg, Wis., which he is undertaking to dispose of.

The Wallace Machinery Co., Champaign, Ill., has taken up the manufacture of compressed air house cleaning machinery which it will soon place upon the market.

The Bub Air Brake Co., Kittanning, Pa., has filed a certificate of amendment, changing its name to the Chicago Air Brake Co. The company was incorporated at Dover, Del., June 5, 1906.

An involuntary petition in bankruptcy has been filed in the United States district court, Chicago, against the John F. Brady Turbine Co., manufacturer of engines, at 43-47 West Fulton street.

The Ashland Iron Works Co., Ashland, O., general jobber, founder and patternmaker, of which Robert McIntosh, Cincinnati, and C. L. Morkel, Galion, O., are proprietors, advises that it has begun operating, and is making a specialty of iron and brass castings.

The stockholders of the Howard Stove & Mfg. Co., Savannah, Mo., will meet July 22 to vote upon the proposition to remove the foundry to Omaha. This will be a formal ratification of steps already taken toward removal. The company is said to be under contract to have its plant in running order in Omaha by Oct. 1.

A petition in bankruptcy has been filed by creditors against the Duby & Shinn Mfg. Co., mechanics' tools, with offices at 40 Wall street, and plant at Long Branch, N. J. The company was originally incorporated under New York laws, May 10, 1905, with a capital stock of $5,000, which was increased to $10,000, Feb. 1, 1906.

The Arkansas Stone & Iron Co., Little Rock, Ark., has been incorporated to engage in the mining and selling of iron ore and stone at Sloan, Ark. The company's offices will be located at Imboden. The capital stock has been placed at $25,000, and the incorporators include W. H. Vaughan, A. B. Vaughan and Jesse C. Hoover.

The plant of the Leonard Stove & Range Co., Bowling Green, O., was sold June 30 to the Wood County

Savings Bank Co., at public sale. The real estate and part of the equipment sold at $8,200; finished stoves, at $715; flasks, patterns, etc., at $1,000; the total sale netting about $15,000, or $7,870 over and above the mortgage held by the Bowling Green Board of Trade Co.

In the Philadelphia shops of the Baldwin Locomotive Works, there were 23 locomotives to be finished and delivered last week, almost double the customary number. The Eddystone, Pa., plant of the Baldwin works reports that there is now more work on hand than there has been at any time since the first of the year. The Erie railroad has made a contract for repairing 40 of its engines, some of which are now arriving at Philadelphia for overhauling.

The Tennessee Metal Culvert Co. has agreed with the board of trade of Nashville, Tenn., to erect a factory at West Nashville, and bids for the erection of the new buildings, which are to cost $5,000, are being opened. The officers of the company, whose capital is placed at $25,000, are: President, G. D. Charles; vice president, F. O. Putney; secretary, L. G. Anderson; and treasurer, M. J. Flach. The company is removing to Nashville from Middletown, O.

The first four locomotives of the order for 30 recently received from the Paris-Orleans railroad of France, have just been shipped by the American Locomotive Co., from its Schenectady, N. Y., plant. The engines are the largest passenger locomotives ever sent to or used in Europe, differing in many particulars from the American type, although similar to what is known as the Pacific type. The engineer is stationed on the left side of the engine.

The Grimes Foundry & Machine Co., Bluffton, Ind., one of the oldest established industries of the city, which has heretofore been operated as a co-partnership, has been incorporated as the George W. Grimes Co., with a capital stock of $10,000. The directors are: H. L. Norris, Otis E. Shafer, Aurie B. Grimes, Helena G. Longden. The plant is a combined machine and repair shop and foundry, its principal output being the Grimes portable drill for use in oil fields.

The Electric Controller & Supply Co., Cleveland, has changed its name to the Electric Controller & Mfg. Co., the latter name more truly indicating the nature and scope of its business, as evidenced by the following list of apparatus manufactured by the company: Controllers, both manual and magnetic switch types for all purposes; lifting magnets, electric brakes, magnetic switches, solenoids, limit stops, arc welders, crane fittings, knife switches, flexible couplings and the electric fault finder.

The request of the principal stockholders of the National Steel & Wire Co. for a compromise of its claims against the National Wire Corporation, New Haven, Conn., which amount to about $2,500,000, has been granted by the superior court. The Steel & Wire company's receivers have agreed to settle the pending litigation by paying the bondholders of the wire corporation at par; allowing the unsecured creditors 70 per cent of their claims, and the balance of the assets to go to the National Steel & Wire Co. The result of the compromise will be that the Steel & Wire creditors will receive about 40 per cent.

The H. G. Trout Co., Buffalo, whose incorporation was recently noted, advises that it was formed to take over the business formerly run under the name of H. G. Trout. The business will be conducted the same as heretofore and with the same working force. The company is running a general machine shop, iron foundry and brass foundry, and is in the market for all kinds of jobbing work. It makes a specialty of marine work, and has furnished propeller wheels for use all over the country. It recently delivered a 15-foot diameter propeller wheel weighing 10,000 pounds to a New York City party, and now has a 13-foot wheel under way to go to Mobile, Ala. It reports a good trade in motor boat wheels.

The Seneca Wire & Mfg. Co., Fostoria, O., wire and nails, advises that while its capital stock has been increased, the company does not expect to make notable additions to its plant. It is building, however, a small addition to the nail department, which will be completed shortly. The company's works are now running to full capacity, and have been during all the time since the mill has been put in operation, the recent panic having had no particular effect upon its business. It is well stocked with orders and expects to be able to run the mill every day. At present, on account of increasing wire and roofing nail business, it is running both departments 23 hours, and it finds this part of the business to be far beyond expectations.

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**Trade Notes:—**

The Riverside Engine Co., Oil City, Pa., builder of the Riverside heavy duty gas engine, has extended its sales organization by opening an office in the Rockefeller building, Cleveland, in charge of the Holbeck company. The company's shops have been running full time in spite of the financial depression.

The Laclede Christy Clay Products Co., St. Louis, Mo., announces the acquisition of the business property and good will of the Jamieson-French Fire Clay Co., Lake Junction, St. Louis county, Mo. Henry K. Lackland, formerly secretary and general manager of the Jamieson-French Co., will be associated with the Laclede-Christy company in the capacity of manager of its high grade clay department.

Announcement is made that the Cutler-Hammer Mfg. Co., Milwaukee, maker of electric controlling devices, has just completed arrangements whereby this firm will be represented on the Pacific coast by Otis & Squires, 111 New Montgomery street, San Francisco. A large stock of standard Cutler-Hammer controllers will be carried by Otis & Squires, enabling them to make prompt delivery of apparatus. A. W. Vinson, who has for several years been connected with the engineering department of the Cutler-Hammer Mfg. Co., has been transferred to the office of Otis & Squires, where his services will be available to those confronted with problems of electric control.

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## TRADE PUBLICATIONS.

ROLLS.—The United Engineering & Foundry Co., Pittsburg, is issuing an unusually handsome catalog bound in a green buckram cover with gold lettering. The catalog deals with the progress of roll making and details the different processes in the manufacture of chill sand and steel rolls. The various operations in the construction of these rolls are illustrated and the subject is treated from the standpoint of the metallurgist, engineer, chemist, foundryman and roll user. The catalog also refers to the company's excellent equipment for the turning and finishing of rolls. Illustrations of the interior of the laboratory, roll turning shop, drafting room, and other departments are presented.

BOLT THREADING, PIPE THREADING AND NUT TAPPING MACHINERY.—The Foote-Burt Co., Cleveland, 1908 catalog, 6 x 9 inches, 54 pages. This booklet gives full descriptions, with a number of illustrations of various types of bolt cutters, dies and taps, die heads, die holders, pipe threading machines, nut tapping machines, etc. Quotations and numerous tables of areas and weights, decimal equivalents, dimensions, surface speeds, etc., are also included.

THE ALLIS-CHALMERS CO.—The Allis-Chalmers Co., Milwaukee, is distributing a souvenir booklet describing its works and products. The products of the Allis-Chalmers Co. are illustrated and described and lists of users are given. Figures showing the dimensions of the various buildings, length of railroad tracks, ground area, reservoir and power house capacity, give some idea of the immensity of the West Allis works of this company.